

Illustrated FOREST & OUTDOORS

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1947

JLB

Montreal, Canada.



Photo: Norman G. Rogers

Baillie

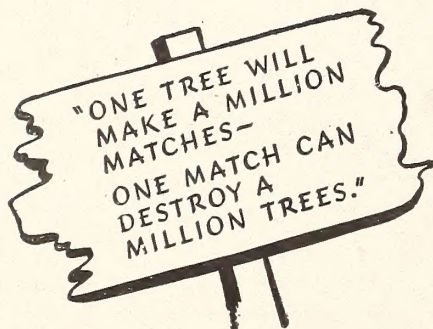


PUBLIC ENEMY NUMBER ONE

TO "THE FIRE WOLF" goes this dubious honour. To human carelessness go his thanks; thanks for the red-hot embers, the smouldering matches and the burning sparks of tobacco which have gone far to make "The Fire Wolf" the forests' Public Enemy Number One.

• Each forest fire makes you poorer—in wealth, national prestige and natural beauty.

- Stamp out your camp fires.
- Grind your matches to dust.
- Douse your embers.
- Get rid of "The Fire Wolf"!



SHAWINIGAN CHEMICALS LIMITED

QUEBEC POWER COMPANY

associated and subsidiary companies



HARVEST TIME

Canada's pulp and paper industry distributes \$200 millions to buy materials and supplies to fabricate the finished product.



COSY QUARTERS

The modern type of buildings for woods workers is a far cry from yesterday's shacks.

While the World Doubles Its Output of Pulp and Paper . . .

ALL signs point to the doubling of the world's pulp and paper industry in fifty years, and perhaps within the shorter period of twenty-five years if peace reigns on earth. During the ten years of boom and depression from 1926 to 1936 pulp and paper products as a whole increased one-third, equivalent to an added 800,000 tons per year. For a long time consumption in the United States of America has been equal to consumption in all other countries combined. With the rapid spread of literacy and with the multiplying uses of paper and fibreboard, there is every prospect of rising demand from decade to decade. Paper is a simple product readily appreciated by the multitude. Board products have extended by leaps and bounds, in many cases meeting vital needs to supplement lumber and plywood. Special pulps for chemical uses have jumped since the First Great War to the equivalent of nearly ten percent of paper and board tonnages. It would be hard to find a pessimist so far as future demand for the wide range of pulp products is concerned.

What about Canada's share in this glowing opportunity? The problem goes right back to the forest. Norway, Sweden, and Finland together, with forest area roughly one-fifth of our own, operate their similar woodlands with such care that the annual crop of raw material is appreciably more than in the whole of Canada. Our own foresters now have a fairly clear picture of the measures which could be taken to protect our tre-

WILL CANADA SHARE THE OPPORTUNITY?

by JOHN S. BATES

Pictures by courtesy "The Observation Post"

mendous areas of accessible forest from the hazards of fire and insects, and to cut selectively each year in such a way that the rate of growth in future would be progressively upward to the high level nature intended. Federal and Provincial taxes originating from forest sources represent a figure far beyond the amount needed for the economic handling of our

forests. Only a tiny fraction of these funds to date have been reinvested in the forest. Public opinion is the potent force which can bring about the changes which are so obvious to those engaged in wood-using industries. One authority after another has pointed out that the most profitable programme for Canada is to plough back into the forest a reasonable proportion of available income for steady increase of raw material supplies. Is it worth while by such economic means to treble Canada's pulp and paper industry within the next fifty years?

We Canadians are proud of our pulp and paper industry, and rightly so. Writers enthuse over the enormous size, high production, huge exports, and great value of our industry in relation to Canada's national economy. About one-third of our annual wood cut is in the form of pulpwood, another third is in sawlogs for lumber manufacture, and the remaining third is used direct as fuelwood. Each year our pulpwood amounts to one-fifth of the world's total. Today Canada's forests are far below the fine condition of a century ago. Just how can anyone talk with confidence about more and more pulp

Norway, Sweden and Finland together have one-fifth of Canada's forest area, but they obtain more annual "wood harvest" than the whole of Canada.

The untouched forest areas are not within easy reach of the million dollar mills . . . No brilliant future unless we mend our ways!



FOREST RESOURCES

to Stagger the Imagination

"The figures of Canada's forest resources stagger the imagination. Only two other countries, Russia and Brazil, have greater forested areas. Canada's total is about $1\frac{1}{4}$ million square miles. The productive area, 770,000 square miles, is about equal to the combined areas of the British Isles, France, Spain, Portugal, the Netherlands, Denmark and Sweden."

—Excerpt from a Monthly Letter of The Royal Bank of Canada

The Royal Bank assists in the financial operations necessary to convert Canada's vast forest resources into pulp and paper, lumber, and many other products for domestic use and for export.

THE ROYAL BANK OF CANADA

ASSETS EXCEED \$2,130,000,000



PAY WINDOW

220,000 Canadians receive \$150 millions yearly from woods and mill operations of the pulp and paper industry.

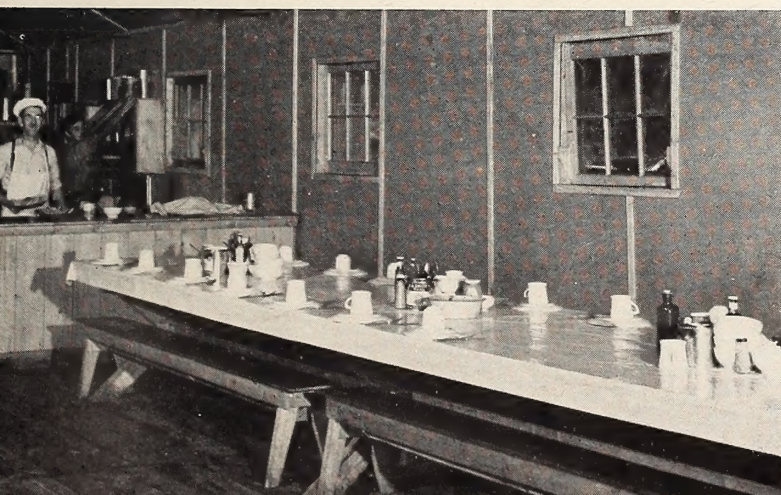


THE CALL

Forest workers lose no time when the chef gets on the air waves.

MEAL TIME

The woods worker fares incomparably better today than a generation back.



and paper for Canada?

The answer is that comparatively little increase in production can be looked for unless something is done about the forest supply. Quite true, we could give up making lumber, but there is no better way of utilizing trees of large size than by converting into sawn products for worldwide distribution. Some of the present fuelwood could be turned into pulp products, but many areas of this country would suffer seriously if other fuels had to be substituted. Canada already is turning a remarkably high percentage of our wood into paper and board products of enormous value. The untouched forest areas are farther and farther away from the million dollar mills. Fires and insects each year devastate more trees than are cut for pulpwood. There is no brilliant future in our industry unless we mend our ways.

World statistics are none too accurate, but there are certain figures which should be known by all Canadians. The annual woodcut in all countries reaches the impressive total of about 750,000,000 tons dry weight, but this is much less than world mining of coal converted by nature over the centuries from stupendous tonnages of prehistoric forest growth. The over-all averages each year are about 67% fuelwood for direct burning in place of coal and other fuels, 28% sawlogs, poles, posts, etc., for lumber and related industries, 5% pulpwood for all kinds of paper and fibreboard. With our present scientific knowledge, it is quite apparent that existing wood supplies can be channelled towards the doubling or the tripling of the world's pulp and paper industry. Much of the normal fuel wood is suitable for pulp manufacture, and alternate fuels for domestic use could be found conveniently in some districts. The trend of the world's lumber industry has been gradually downward since 1900, and in future it may pay better to cut a larger proportion of the forest crop at medium age for pulp instead of waiting for growth to sawlog size. In several countries more slabs and edgings from sawmills can be recovered in the form of pulpmill chips. Enormous stands of idle hardwoods are becoming of practical interest to pulp makers. The leeway for additional pulpwood indicates plenty of margin for expansion.

Furthermore, an organized move to grow more trees in selected areas of forest countries could provide for any conceivable requirements by all wood-using industries throughout the world.



FOREST & OUTDOORS

the magazine of

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1018 Canada Cement Building
Montreal Canada

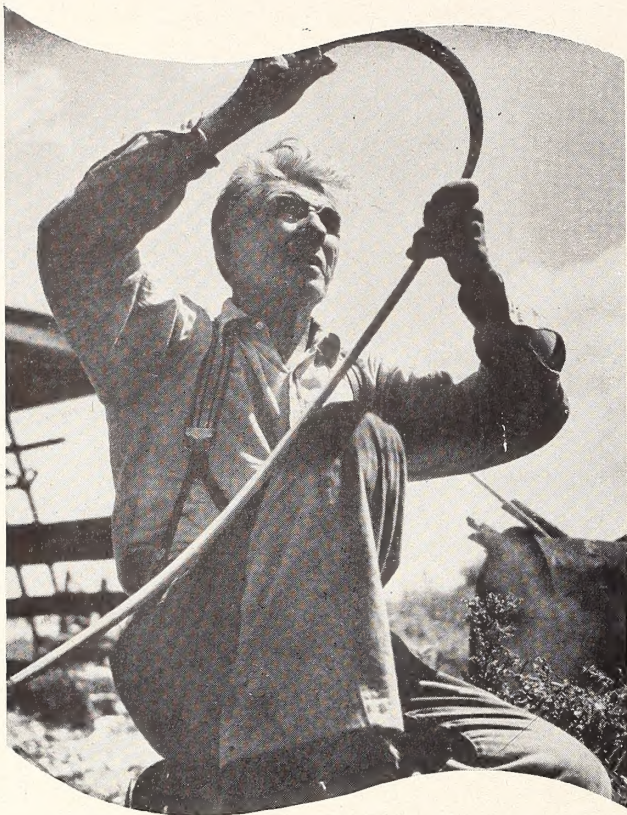
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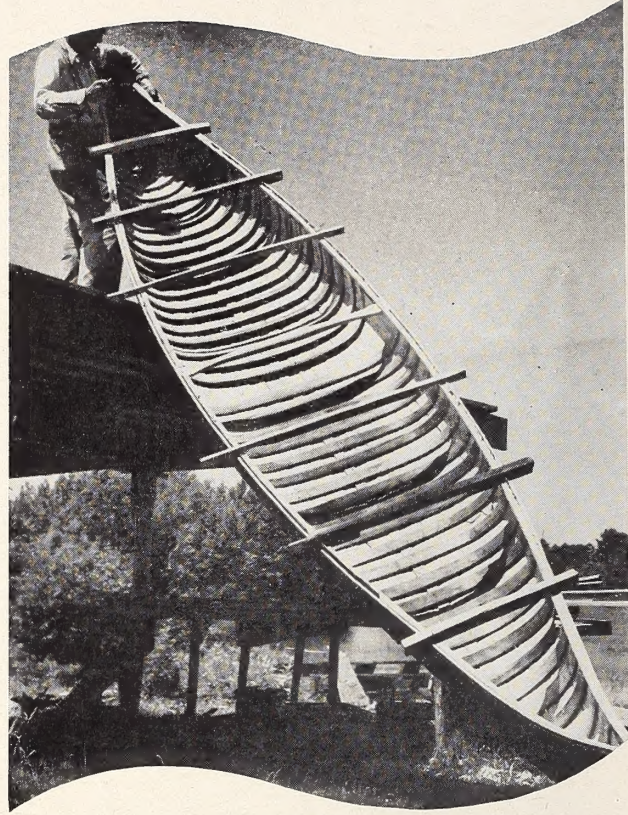
All proceeds of 'Forest and Outdoors' are devoted to the welfare of Canada's woods, waters and wildlife.

ASSOCIATION OFFICERS

Chairman of the Board: Vernon E. Johnson.
President & General-Manager: Robson Black.
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Dr. John S. Bates.
Vice-President: Fraser Keith.



The ribs have to be bent just so to give Matt's canoes the grace and symmetry which they assume on the water. Matt, probably the best birch canoe maker in Canada, has sold his canoes in France and Australia as well as throughout the Dominion.



Nearing completion at Matt Bernard's capable hands, this 16-foot birch bark canoe will sell for around \$45. Note the sturdy yet light construction, a feature of all Bernard canoes. Top price he's received was \$125 from a museum. Photos by Malak.

MAKER OF BIRCH CANOES

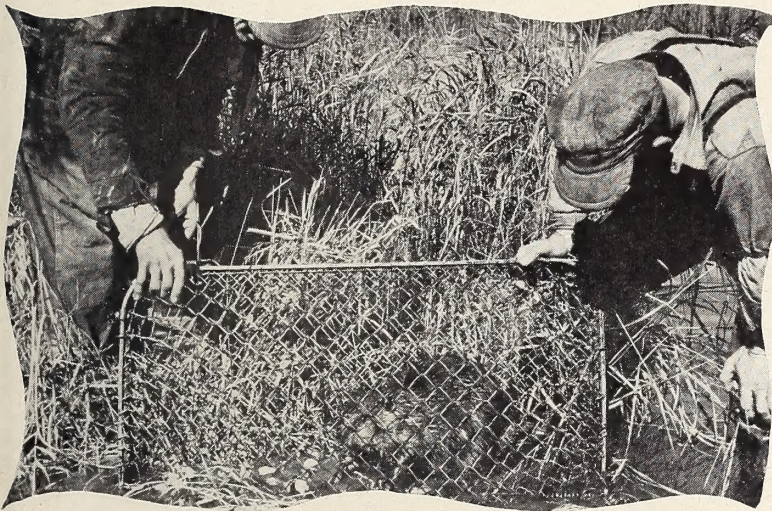


Scorning the seated posture as an inefficient white man's innovation, Matt Bernard paddles either kneeling or standing. This standing business, incidentally, is a neat trick if you can do it — but don't try it unless you can swim!

The Beaver Can Be A Nuisance

by LYN HARRINGTON

Photographs by Richard Harrington



Trapped! This beaver has been caught alive and will soon be on his way to the holding-pen. He will go to re-stock some depleted trapline.

THE beaver is without doubt the animal to which Canadians owe the most. It was his shining fur that developed the country, that brought trade and commerce into the wilderness. Search for his pelt drew explorers across the lakes and prairies and through the mountains to the Pacific Ocean. It was the fur traders who discovered the route to the Arctic ocean.

We are discovering that we owe the beaver another debt, probably equally important. He is the true conservationist, and his dams prevented the loss of much of our most valuable soil. His dams impounded the silt and humus which otherwise would have been carried downstream. Beavers are encouraged in our national parks for that reason among many others. Recently the province of Alberta has turned to this natural means of preventing the destructive loss of soil through the run-off of water.

But for all his contributions, there are places where the beaver is considered a nuisance. They go about their work with their inherited zeal and customs. All too often it interferes with the work of man's hands.

Along the Hudson Bay Railway in Manitoba, the order has gone out that the beaver must "cease and desist". They have been too energetic along the line. To a beaver a railway fill with culvert is merely a defective dam. He has to stop that water from escaping. Come nightfall, he and his chisel-tooth tribe set to work, and by morning a solid mass of sticks, roots and mud is plugging up the culvert. They even use the railway's own drainage ditches for canals. In fact they occasionally dam them back, too.

Beaver dams even a distance back from the tracks can prove a menace. A large dam broke last autumn, and flooded the railway tracks, washing away the gravel ballast. Another dam merely created a lake beside the line, which so weakened the fill as to "put a slowdown on the track."

So often had the trick been repeated that an arrangement was made between the railway officials and those of the Games Branch. Now two men are employed

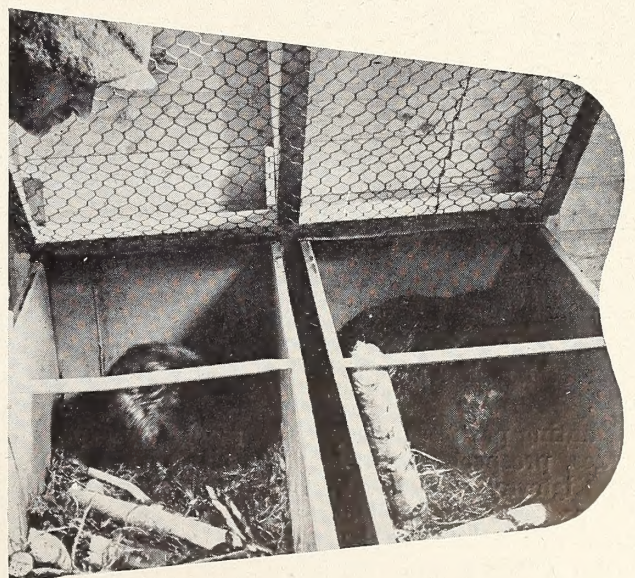
by the latter, for the sole purpose of keeping the tracks clear of nuisance beaver, in order to protect the railway. The official trappers get the tip-off from the section-men and set their live-traps in place. But it sometimes happens that a lot of beaver get the idea at the same time, and the two trappers must shuttle up and down the line on the speed-car.

They must also break up the dams that menace the line. Clearing out an ordinary beaver dam carries little risk with it. But to clear out one from underneath a culvert could be very hazardous. While it would be simple to work close to the dam, there is too much danger of being trapped underneath by the rush of muddy water and sticks. The game wardens therefore use a long hooked pole for pulling out the dams and sometimes it is extremely difficult work.

Section men are not permitted to trap beaver. But one section man, while waiting for the trappers to arrive, decided to at least halt operations. He hung a raincoat up on a pole, so that the skirt swished around in the water. It was effective for a very short time, but it didn't take long for the beaver to decide it was only a scarecrow. They cut down the pole, and used it in the dam.

Another section man had a similar idea, except that he used a lighted lantern, sure that it would discourage the eager beaver. They merely worked from the other end of the culvert. The dammed-back water then rose so high, that presently the lantern was drowned out.

When official trappers have live-trapped the beaver, they put them into strong boxes, and convey them along the railroad to the holding-pen at Thicket Portage. Here a number of pens were constructed of sheet-metal and concrete, with one section for holding water. Each day the pens are cleaned out carefully, fresh water and fresh poplar brought in to the temporary guests. It is amusing to see the beaver trying to plug up the drain, when the tanks are being emptied.



Cages for holding the beaver are made of concrete floors, with sheet-metal sides, and wire tops. The water-tank is in the immediate foreground.

The beaver do not stay long in the holding pens. They are transported by rail or plane to restock some trapping ground barren of beaver. Sometimes it is the trapline of an individual, sometimes an area protected by the government. It is a means of conserving not only the beaver, but the trapper as well. Beaver are so much more valuable than many other animals, that to get started in beaver means a great deal to a trapper. More-

over, it seems evident that where beaver are, other animals congregate as well.

After September, it is not practical to live-trap beaver, nuisance or not. By that time it is too late for them to build their lodges and get in a winter store of food in some new location. The beaver who tamper with the railroad so late in the season pay the full penalty for their indiscretion.

The Alaska Highway Keeps Rolling Them North

by JACK HOLMES



Showing some of difficulties met by wilderness roadbuilders. Typical gully levelled off at top to some extent and earth moved to the bottom by "carryalls". Grade later reduced to 4%.

YOUR car has to be good — and so do you — before you may travel by road to the land of the midnight sun.

That isn't because the Alaska Highway, now maintained by Royal Canadian Engineers, is a bad road. On the contrary, recent travellers pronounce it to be in very good shape. But all cars headed for the 1600-mile through journey must submit to rigid inspection. The occupants, too, must be properly equipped and know how to take care of themselves. Too many jalopies breaking down a hundred miles from nowhere would bring headaches to the maintenance crews and hardship if not actual danger to tenderfoot travellers.

Who use the Alaska road, built in wartime for defense and attack, now that peace is here? A large percentage of civilian travel permits go to American ex-servicemen bound for new homesteads in Alaska. Settlers are going into the Yukon, too. Some, both Americans and Canadians, are men (and women, too) who fell in love with the northland during wartime service on or beyond the road.

Hunting parties, usually accompanied by experienced guides, prospectors and trappers also may be met by the Highway traveller. You can travel by bus, too, if you prefer. It leaves Dawson Creek, B.C., the end of steel, three times a week for Whitehorse, 927 miles north. There you change to another bus for Fairbanks and other Alaska points.

Most of the 1600-mile road, of course, lies within Canadian territory and was taken over by this country

at the end of the war, by prior agreement, from the American army which built it in 1942. But the Canadian Army hasn't surrendered all its authority on the Highway to civilians as the road is still regarded as a vital cog in joint Canadian-American defense plans for the vulnerable north-west frontier.

Eighteen maintenance crews, spaced about 90 miles apart, constantly improve rough spots left during hasty construction, replace wooden bridges with more permanent structures, and batter at the snowbanks to keep the road open all winter. There isn't a grade above 4 per cent now on the entire road; all curves are wide and gentle and the hard gravel surface varies from 24 to 36 feet in width throughout.

The traveller finds ample overnight accommodation at Dawson Creek, Fort St. John, Fort Nelson, Watson Lake, Whitehorse, Boundary, Fairbanks and other main points on the route. Some of these busy little centers were lonely trading posts, or unmarked spots in the wilderness, before Canada completed in 1941 the fine airports of the north-west staging route, forerunner of the land highway.

Plans for a tourist boom in the sub-Arctic are reflected in new hunting lodges, overnight cabins, stores and restaurants now appearing at intermediate points. As the distance dwindles between gas stations — now nearly 200 miles apart in some sections — and other such ubiquitous evidences of modern civilization, the Alaska road may lose some of its glamour and allure for those seeking solitude from the madding throng. But that won't worry John Public, who soon will load the family into the old sedan, head for Eskimoland and send Aunt Minnie the inevitable postal greeting: "Having a fine time. Wish you were here."

Thus North America's last and greatest frontier will be brought to everyman's doorstep by the automobile and the wartime roadbuilder. The Alaska Highway, brought into being a generation before its time by the Pacific crisis, shows no sign of reverting to the bush as many predicted it would after the war. Two great and friendly nations regard it as vital not only to their joint defense plans, but in the development of a vast and wonderful land whose potentialities have fired the imagination of a continent.

ANNUAL MEETING Canadian Forestry Association

Windsor Hotel, Montreal
Monday, February 10th, 1947.
Directors Meeting : 10 a. m.
Directors Luncheon : 12.30 p. m.
Public Business Meeting : 2 p. m.



Evergreen Trails

A Camera Study by Norman G. Rogers.

WHEN YOU'RE CAMERA HUNTING IN WINTER

by NORMAN G. ROGERS

WHEN the fields are covered with snow and the branches of the trees are heavily festooned, then the outdoor person gets a longing to be able to take his camera and record some of the scenes. Winter pictures have a crisp, fresh quality all of their own and are endowed with a vigour which cannot be denied. However, to obtain the pleasure of winter photography, a few points should be kept in mind.

First of all, suitable clothing is necessary, especially a light glove which can be used when actually setting the camera or making other adjustments. It is far easier to have a thickness of cloth muffling one's movements than to try to work with small levers and buttons when the feeling has long since departed from the finger-tips. Plenty of pockets are advised as everything may be nicely packed away when starting the tour but after a few pictures have been taken, then the photographer invariably finds it easier to stow some of the equipment



**Early
Winter**

A camera
Study
by
Norman
G. Rogers.

away in a handy pocket than to have to rummage for it just after re-packing it.

The effect of low temperatures on the equipment should be investigated beforehand. Shutters slow down appreciably on some cameras on the market and, in fact, with some movie cameras, the mechanism will fail altogether when it gets too cold. Taking the camera into a warm house should also be guarded against as, once inside, moisture will condense on the cold surfaces and if the instrument is taken outside again before it has all evaporated, it will then freeze solidly on the surfaces. It should also be remembered that the inside of the camera will not warm-up as quickly as the outside and, if air can get into it, then moisture will also be condensing on those inaccessible inner surfaces. Breathing on the equipment out-of doors is also to be frowned upon for the same reason. Film packs sometimes show a tendency for the film to detach itself from the paper when the tab is pulled. This will usually happen only in cold weather but it renders the pack completely unusable.

As far as the actual technique for taking snow pictures is concerned, little needs to be said. Practice and experience are the best teachers but a few hints may not be amiss here. The average person will over-expose his snow pictures. Even if a meter is used, the reading may be so fantastic that it will not be believed. However, more snow texture is lost through overexposure than for any other reason. Bright sun is necessary to record good snow texture and it should also be remembered that the shadows on the snow are at their greatest when facing

towards the light. A lens hood then can be very useful. Some people actually believe that snow is white but this shows a lack of observation. Snow will always appear the colour of the light which is falling on it, hence the highlights are practically always yellowish (or reddish towards sunset) while the shadows are a deep blue. A filter can be successfully used to help record texture although proper exposure is still the prime requisite. A deep yellow or even a light red filter under some conditions will make the shadows darker and hence the relief will stand out better. A polarizing filter can control troublesome glare. In the case of snow and water landscapes, a polarizing filter can make such a difference in dealing with reflections on the water that it would have to be seen to be believed. The film is relatively unimportant although panchromatic is usually my choice as the shadows may be rendered a little darker with it. Also, since texture is often very important, then fine grain should be sought after.

Summing up then, the perfect winter day for photographs of the snow is one with a brilliant sun but with some light clouds to help break up bald expanses of sky. If the day is overcast and gloomy, or if it is snowing, then trying to picture the snow itself is out of the question. The attempt should be made, instead, to photograph shapes and masses and to try to obtain some atmosphere in the prints. Careful watch should be kept for the first open water in the brooks and streams as the dark masses of water can very successfully balance an otherwise barren composition.

100 Million Trees — Britain's War Sacrifice

by ERIC WILLIAMS

BETWEEN the outbreak of World War II and the end of 1943, one-hundred million trees were laid low in the British Isles to serve the military machine. By June 1945 more than 17 million tons of timber had been produced from the relatively small stock existing in the British Isles, but this involved the sacrifice of two-thirds of all softwoods, and one-third of the nation's hardwoods.

Under State direction, five million acres of effective woodland and forest are planned, two million acres to be secured from existing woodlands and three million acres from afforestation of bare land. By this scheme about 35 per cent, of the nation's current timber requirements will eventually be produced — a self-supporting Britain would need 14 million acres at the present rate of consumption.

Private woodlands formed about 97 per cent of timber resources during the 19th century, and before World War one an estimated 3,000,000 acres was under woodland. Demand was so great, however, that home production was less than 8 per cent of consumption.

In 1918, a Forestry Sub-Committee, set up by Britain's Ministry of Reconstruction, strongly urged the establishment of a State forestry policy administered by a central authority. Afforestation of 1,770,000 acres, carried out by State aid over an 80-year period was considered essential if the United Kingdom were to remain independent of imported timber during a three-year emergency.

As a result, Forestry Commissioners were appointed, with a limited grant to develop the nation's forestry resources.

With the transition to peace, and at the lowest ebb of Britain's timber resources, the Forestry Commission's long-term plan is now in operation. Afforestation target during the next 10 years is the planting of 500,000 acres of bare land. In addition, two million acres of woodland in private ownership will gradually be brought under effective management.

The education and training of a large corps of Forestry Officers and Foresters is being carried out. Four universities are today training Forest Officers during a three-year course, and Foresters and Forest Apprentices are being trained at schools in the Forest of Dean and at Benmore.

To provide space for the large sowing programme and to cope with the present stock of about 230 million seedlings and more than 70 million transplants, the nursery area is being enlarged from 1,000 to 1,500 acres. To house the workers who will be carrying out this vast scheme, 12,000 cottages are planned.

With this vigorous development of British silviculture there need be no doubt as to the future productivity of British forests: pit-props equally as good as those imported can be grown in Britain; excellent ply-wood can be produced from beech, birch and Corsican pine, Sitka spruce thinnings make fine quality paper, and miscellaneous species, formerly neglected, may be usefully exploited.

Britain has an ideal climate for the rapid growth of trees, particularly conifers. Her soils are generously suited and there are vast areas of land awaiting forestry development. Her Forestry Commission is fully exploiting these resources.



When All The World Is Young

WHEN all the world is young, lad,
 And all the trees are green;
 And every goose a swan, lad,
 And every lass a queen;
 Then hey for boot and horse, lad,
 And round the world away;
 Young blood must have its course, lad,
 And every dog his day.

WHEN all the World is old, lad,
 And all the trees are brown;
 And all the sport is stale, lad,
 And all the wheels run down;
 Creep home, and take your place there,
 The spent and maimed among;
 God grant you find one face there
 You loved when all was young.

Ontario Manufacturers Declare for Conservation

Excerpts from a Memorandum submitted
 to the Ontario Royal Commission on
 Forestry on behalf of the Ontario Division
 Canadian Manufacturers' Association

THE forest estate is not an isolated public property.
 It not only provides saw timber and pulpwood,
 but it also provides the watersheds of a multitude

of rivers and is the source of recreation and of fish and
 game. Many communities, large and small, have been
 created by industrial utilization of forest products which,
 in turn, furnishes a heavy percentage of the freight
 traffic of our railways. Manufacturing communities of
 Ontario's more southerly areas derive no small part of

(Continued on page 25)



WHY ADD MORE *To Canada's* LOST TREASURES

by Jas. L. BAILLIE Jr.

WITH the fate of the Great Auk, Passenger Pigeon, Labrador Duck and other American birds still fresh in their minds, thinking persons are watching with interest the efforts that are being made to preserve the Trumpeter Swan, largest of all native North American waterfowl.



THE AUTHOR

The Trumpeter Swan is not to be confused with the somewhat smaller, and much more common Whistling Swan, shown in the accompanying photograph.

Once widespread in North America, nesting from Alaska to James Bay and south to Wyoming, Iowa and Indiana — wintering to the Gulf of Mexico — the beautiful Trumpeter Swans (which weigh up to 30 pounds) are now confined to a pitifully small area in the southern pan-handle of Alaska, in British Columbia and Western Alberta, and to an even more restricted area in Wyoming, Montana, Idaho and Washington.

The total admitted population is only slightly more than 1,000 birds.

Since Trumpeter Swans are migratory, their protection is an international responsibility. To state that both the United States and Canadian Governments have given careful protection to these birds, ever since their decline



Photo: W. H. Carrick

Whistling Swans on Lake Manitoba.

first began to concern sportsmen and naturalists about 1907, is to state a truth. But conservationists, although appreciating that everything possible is being done to promote the welfare of these great birds, wonder if protection has not come too late to preserve the remnant for posterity.

The principal U. S. stronghold for Trumpeter Swans lies in Yellowstone National Park, Wyoming, and in nearby Red Rock Lakes Refuge, Montana. According to the latest census, 221 of these swans inhabit the United States in those localities.

The other occupied areas lie mainly in British Columbia and extreme southern Alaska, principally along an area of coast extending 500 miles from Vancouver Island to Ketchikan, Alaska. Canadian authorities admit a population of 500 birds, while the Alaskan colony numbers 350.

Since the status of the British Columbia has been for many years a closely-guarded secret of the Department of Mines and Resources (Canada), it is not possible to make a very definite statement concerning the well-being of the Trumpeters there. Recent evidence, however, seems to indicate that 2,000 birds would more closely approximate the number of B. C. survivors.

Officials of the U. S. Fish and Wildlife service are "most optimistic" concerning the future of the 221 birds in Wyoming and Montana, and the birds have shown a steady, but slow increase from 33 birds in 1934 to their present total. It is significant to note, however, that the Emergency Conservation Committee — a private organization — has been active recently exploring the possibilities of rearing Trumpeters in captivity, to supplement the official program designed to preserve the species from extinction.

The U. S. authorities may not be alarmed about the future of the birds under their control, but we strongly suspect that this expression of optimism is based on the recent (1940) discovery of the 350 additional wintering birds in Alaska, and on the encouraging reports of increase emanating from Canada's most westerly province, more than it is on the status of the 100-odd pairs breeding in the general vicinity of Yellowstone National Park.



OUR TIMBER RATTLESNAKES

One of the most deadly of all Canadian reptiles is the Timber Rattlesnake, found only at Niagara Glen. We mention this fact not to discourage tourists from visiting this fascinating locality but rather to point out that there is an increasing number of persons concerned about the well-being of the few individuals of this beautiful snake surviving on Canadian soil.

The Timber Rattler, like most of our native reptiles,

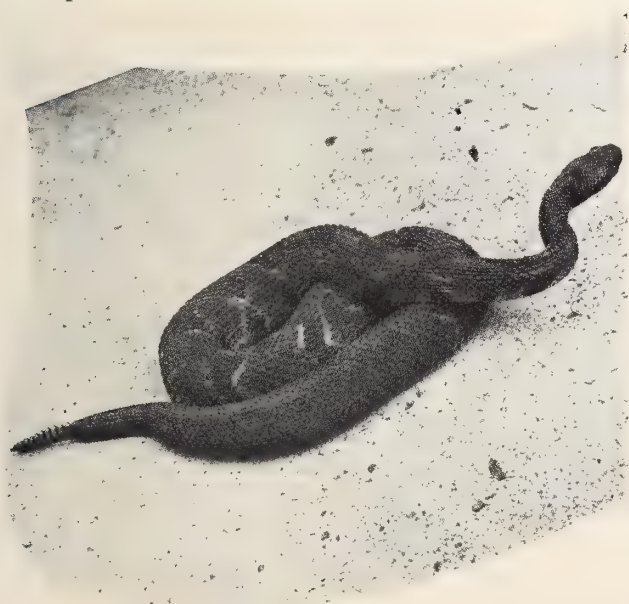


Photo H. M. Halliday

Timber Rattlesnake from Niagara Glen. They are seldom abroad in daylight and are harmless unless unduly molested.

has suffered considerably at the hands of man, and only a pitiful remnant exists today. Herpetologists tell us that, although never widespread in Canada, these big, venomous snakes once occurred over a much wider area of southern Ontario than at present. Galinée, at any rate, encountered three of them at Lake Medad, north of Hamilton, in September, 1669, and commented upon their length (6 to 7 feet) and the fact that they possessed rattles on the end of their tails. This observation could only refer to the big Timber Rattlesnake, since the only other Ontario rattler does not exceed three feet in length.

In 1877, another was captured one mile south-west of Niagara Falls by the late Dr. J. H. Garnier and the specimen (badly bleached) is still preserved in the collection of reptiles in the Royal Ontario Museum of Zoology.

Point Pelee, at the western end of Lake Erie, provided a further record for Canada. In September, 1918, a specimen measuring 56½ inches, with a girth of 6¼ inches, and weighing 6 to 7 pounds, was killed at the tip of the Point by Captain G. Wilkinson, of the Life Saving Station. The specimen reached the National Museum of Canada through the late Dr. W. E. Saunders.

Records during the past three decades have all come from Niagara Glen, and it may be assumed that this beautiful creature has been extirpated elsewhere in Canada.

One, measuring 3½ feet, was caught there in July, 1927 and residents of the Glen vicinity reported one or two killed every year in July and August. In 1941, two were captured, measuring 42" (6 rattles) and 46" (9 rattles), respectively. The former found its way to Stamford High School and the latter, captured by Frank Darroch, a Toronto school teacher, to the Royal Ontario Museum. A photograph of Darroch's specimen accompanies this article.

The big Timber Rattler is normally found from Alabama and Texas, north to New England and Minnesota. Its principal food (94%) is small mammals. It is not to be confused with the smaller Massasauga Rattlesnake, which is still found quite commonly in the Bruce Peninsula of Ontario, and uncommonly in Muskoka and Parry Sound Districts, on Manitoulin Islands, in Wainfleet Swamp and in the County of Prince Edward. In Western Canada we have Pacific Rattlesnakes (in the mountains of southern British Columbia) and, on the prairies of southern Saskatchewan and Manitoba, Prairie Rattlesnakes.

Although the outlook is indeed grim, one cannot refrain from expressing the hope that the few surviving Timber Rattlesnakes on Canadian soil will receive a measure of protection from visitors to the Glen. At the present rate of destruction, Canada will soon lose another of her most interesting species of wildlife.

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THE PEOPLE PAY WHEN FORESTS VANISH

A HOST of unfavorable economic and social effects has followed indiscriminate forest destruction. In northwest China, parts of Arabia, India, and North Africa it has been a primary factor in bringing misery and starvation upon many of the oldest and most thickly settled centers; now it threatens to deprive highly civilized countries of timber needed for industry. It is not theory but fact that the stripping of mountain forests and the misuse of land result in torrents, erosion, floods, and a general change in the regime of streams; the disappearance of forests may seriously affect climate and rainfall. (United Nations Committee on Forestry).

Note Book of a conservationist abroad



'Notebook of A Conservationist Abroad'

contains a compilation of seven articles written from Norway, Sweden, Switzerland and England by Robson Black, President of the Canadian Forestry Association. Attractively printed on coated paper, with colour decorations, and sixteen half-tones. Mailed to any address, postfree, for 15 cents a copy or 10 cents each, in quantities of five or more. Address: Canadian Forestry Association, 1018 Canada Cement Building, Montreal. (Coins or stamps accepted).

PRIVATION FROM WOOD STARVATION

FORESTS are unequally distributed over the earth's surface. Some nations have abundant forest lands, others must depend on wood imports; the distribution of the great commercial forest areas bears no relationship to densities of population. Over 60 per cent of the softwood timber upon which the world depends for construction material is in North America and Europe — areas containing only one third of the world's population. China and India, with their teeming 800 millions, possess less than 3 per cent of the world's forests, while sparsely populated South America embraces almost 30 per cent.

Because of this disparity in the distribution of forests and populations, wide variations exist in forest area per capita. Canada, with sixty-nine acres per person, and Paraguay, with fifty, are amply supplied, but India and the Netherlands have less than one acre of forest land per person, China less than half an acre, Syria and Palestine about two tenths of an acre. Studies in the Ganges Valley demonstrate that this is insufficient to provide even the minimum needed for cooking and for warmth, even at the most primitive levels. As a result of excessive tree-cutting, life among the millions in these crowded countries is forced to adjust itself to the privations imposed by chronic wood starvation. (United Nations Committee on Forestry).



On the Ancient Roman road to Antioch, passing through the northern portion of the Dead City area. The soil has been washed away from the road, leaving it standing in relief.

Vanished Glory of A Hundred Cities

AN EPIC OF SYRIA

by Dr. WALTER C. LOWDERMILK

A CONSERVATIONIST finds in Syria many lessons which we may well take to heart. There mankind has lived and tilled vanishing lands for thousands of years. Decisive results of wasteful and inconsiderate use of land, as well as of the conservation of soil, may be found in the varied types of country of Syria. One may easily read the land use through the centuries writ large across the landscape.

Syria holds some of the grandest ruins to be found in the world. The ruins of Baalbek are without compare in grandeur and preservation to any that we have seen; they are some of the most magnificent ruins in the world today. There are huge stone blocks, 30 feet long, 14 feet high, and 14 feet wide, brought from the

quarry about a mile away and laid down as foundation stones. Massive monolithic pillars of red granite had been quarried at Aswan, Egypt, and shipped 600 miles down the Nile River, and then across the Mediterranean to the North Syrian coast, unloaded and then rolled by human hands over a 5,000-foot pass across the Lebanon Mountains and down into the Bekaa and to Baalbek.

The long and significant past of this part of the world is beginning to be made known, but thus far, little attention has been given to the fate of the land which has been cleared and cultivated, terraced and wasted through the centuries, to supply the food and textiles which made possible the rise of man out of barbarism.

These great ruins in Syria reveal a past prosperity and opulence of populations under Egyptian, Greek, Roman, and Crusader domination. It would be impossible for these populations to thrive today on the surrounding stony sterile slopes. To a soil conservationist, the most striking ruins are those of about a hundred or more

A land that lost itself. In North Africa, due to the ravage of soil and woodlands, stands this giant coliseum at El Djem, all that remains of a great Roman city. The coliseum seated 60,000 persons, not more than a fraction of which could be collected today from scores of miles of surrounding country.



Dead Cities in North Syria, where soil erosion has done its worst and spread a ghastly destruction over a landscape of 1,150,000 acres of former productive lands.

These Dead Cities in their almost perfect state of preservation seem to have been more asleep than dead for 13 centuries. They have not been buried by erosion, but stand high on their rock foundations on the limestone hills, from which 3 to 6 feet of productive *terra rosa* soil have been washed away. This soil was the basis of a remarkable prosperity and opulence in ancient times for this region with its populous centers.

This erosion devastated area is in reality a huge graveyard in which cities of cut-stone stand like tombstones, weathered into a monotonous grayness like that of the exposed skeleton country rock of the rolling hills. Seldom does one find remnants of the red earth. It is lodged in the narrow valley floors where it was saved from being swept out to the Orontes River by winter storms. The good earth is completely gone from the slopes except where walls of ruined buildings have held back small patches of soil. In these patches a few vines or olive trees stand as sorry remnants of a former profitable land use. Otherwise, the landscape is gray desolation, glaring in the summer heat and bleak in the winter cold. Sometimes one finds a yellow and gold desert varnish, or "patina," on the bared rock, giving a marvelous effect. It is fascinating to see toward evening the fairy spectacle of the ruins of Rouweiha silhouetted strange and mysterious against the evening sky. It appears as a modern city, devastated by war or fire. Many of the villas or churches had roofs and would be habitable today. The cut-stone was of such excellent

quality and workmanship that the sculpture, moldings, inscriptions and escutcheons have resisted the weathering of centuries of abandonment.

The Dead Cities of North Syria reveal a period of history of which very little is thus far known. It was a local civilization but very advanced and rich, with a highly developed and distinctive Syrian art found nowhere else. This art was surprisingly delicate, full of freshness and originality. Father Mattern outlines the steps where-in one may follow a constant rise from the third to the seventh century without sign of decadence. But was cut off in its vigor of life and development by the invasion of the Persians in 614 and the conquest of the Arabs in A. D. 630. These nomad invaders killed the inhabitants, blotted out their art and culture, and destroyed their cities, their vineyards and their olive orchards, and the traditions of their agriculture. Today, after thirteen centuries of neglect and patch cultivation to cereals by semi-nomadic descendants of the invaders, and of over-grazing by their goats, soil erosion has completed the destruction of the good earth with a thoroughness that has left this once fertile land a complete man-made desert, void of vegetation, water, and soil, except in rare pockets with scanty cover of crops and thorn bushes. The ruins of a highly developed architecture tell of the advanced culture of this region.

Contemplation of these ruins raises a number of questions. How can one account for ruins of luxurious cities with buildings constructed of choice materials in a manner to endure the ages and in a region which today is denuded, poor, meagrely supporting a few hundred miserable families? How can one explain the former populous centres and prosperity? Whence came such wealth which permitted them to satisfy their artistic tastes and a refined luxury in homes, public buildings, and churches?

This region was once covered with extensive forests. Present day remnants indicate that the principal species were of oak, pine, cypress, and cedar in the higher elevations. Evidence of the forest is found in the architecture. Had not an abundant supply of timber been available the architects would have developed a different type of construction, as they did in the Hauran and elsewhere as we saw in Um Jemal, where timber was not readily accessible. These villas and grand rooms and churches required sturdy timbers of wood as called for by notches in the walls at El Gami, Bara, and other ruins. The ceilings were generally of wood. Much timber was also required for the galleries and furniture and fuel for heating the villas and the water for the baths. Large timbers must have been needed to raise the enormous blocks of stone used in construction, and to build the forms on which were laid the heavy stone arches. Thus for four centuries at least there must have been a sufficient supply of timber in the near vicinity, and of an amount to arouse no anxiety for the future. The removal of the forest doubtless took place as a slow deforestation of the mountains and cultivation of cleared areas, and later the planting of vineyards and olive orchards on a vast scale.

A READER'S VIEWPOINT

From the President of a large Toronto corporation: "There are few donations that give me more pleasure than my annual cheque to your excellent organization. May I say that your magazine is to me the most uniformly interesting that comes to my house. In fact, my daughter and I vie with one another to see who will see it first."

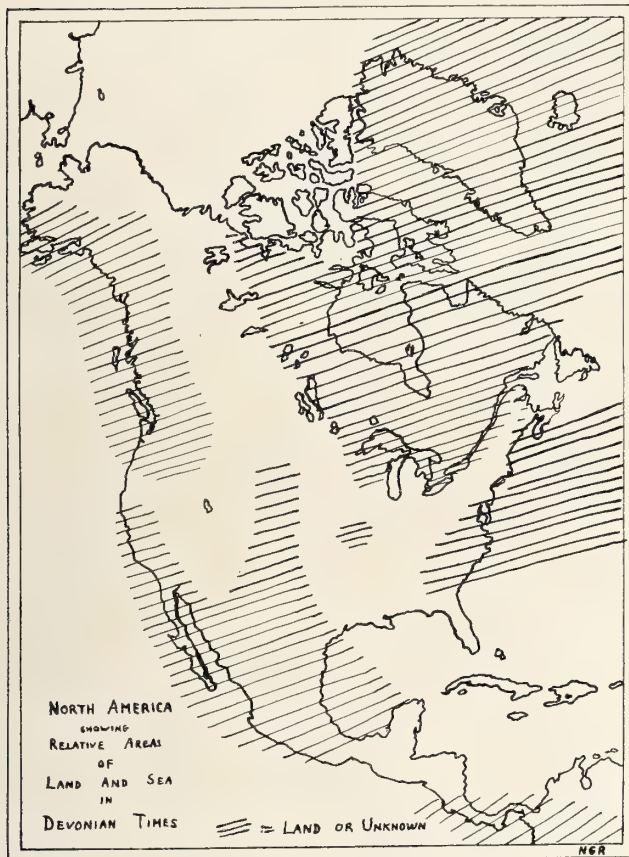
Cabin in the Wildwood

Photo: D. Clemson.



MOTHER EARTH'S FIRST TREES

An informational nature department conducted by NORMAN G. ROGERS



THE subject of the earliest plant life on the earth has always been one of much interest. It is certain that the first plants would have been of a very low order, such as the lichens and the mosses, and that they would gradually branch out and become more diversified and complex with the passage of time. This would correspond well with the evolution of animal life.

These early mosses would be very abundant and would flourish almost anywhere. Their existence would indicate that the climate of that period would be moist with much cloud and very little direct sunshine. Gradually these mosses would grow larger and larger through succeeding generations until they could be classified as trees. (The general term 'tree', applied in a wide sense, means all plants which grow with a permanent single woody stem or trunk of some height, branching out at some distance from the ground). They were then known as *Lepidodendrons*. Giant ferns also existed, growing as large as present-day palm trees and even some of the reeds, called *Calamites*, were of huge size in comparison with their descendants today.

The period of the earth's history in which the first trees probably made their appearance is known as the Devonian. This would mean a period of time about three hundred million years ago, according to the estimates made by some authorities. Then, the fishes were the dominant form of animal life and all the Great Plains area of Canada was covered by the sea.

Most of our modern trees, of course, were not represented, although many of the present plant families

made their appearance at this time. Thus, the conifers, or cone-bearing trees, were represented by a family which grew to a height of nearly 50 feet. These, however, became totally extinct. The largest trees of the era were the club mosses, being about a hundred feet in height and three feet in diameter. Today we see them as tiny plants beside the woodland path scarcely six inches to a foot in height.

An interesting point worthy of mention here is the fact that cannel coal, that familiar hard black stuff which blazes so cheerily in the fireplace and which most coalmen detest because the sharp corners of the blocks dig into their backs, consists mainly of spores which were formed by the ferns and horsetails first found in this period. Much later on in the earth's history seed-bearing plants became more numerous than the spore-bearers and so we do not find much cannel coal in deposits formed during these latter ages.

It was shortly after the Devonian period that, because of the climate becoming steadily colder and one of the ice ages approaching thus making most of the land surface of the earth too cold and arid to support much plant life, most of the flora disappeared. This resulted in the greatest setback to the plant kingdom in the earth's history.

At some places in North America petrified wood may be found. In some places so many entire tree-trunks have been found in one locality, so perfectly preserved that they are difficult to tell from recently felled trees, that the areas remind one of a forest. Such is the case with the "Petrified Forest" of the Southern States. In the usual example of petrified wood, each molecule of the original wood has been replaced by a molecule of a different substance, usually silica. Thus the form of the trunk is perfectly preserved and if a section is made of it and studied under a microscope every detail can be made out as clearly as would have been possible in the original. This is of very great importance to the paleontologist today in the tracing back of the ancestors of our modern plants.

PURSUIT OF THE PRAIRIE WOLF.

Saskatchewan hunters are nothing if not inventive. Here are 'Tiny' Bates and Ralph Steuck, of Abernethy, with their snowmobile which can travel from 40 to 50 miles an hour. In hunting, the animal is pursued until he tires and hides in a clump of scrub. On his attempt at a getaway the well-aimed shot brings him down. Forest and Outdoors is indebted to Judge Louis T. McKim for the picture and information.





Shadow and Substance
in the winter wood-
lands.

A study by Mr. and
Mrs. Raymond Caron.

A WOODSMAN'S GUIDE TO WILDERNESS TRAVEL

by PAUL W. H. G. JOHNSON

THE confidence that you always can find your way back to your starting point will enable you to thoroughly enjoy travel in densely wooded country. Even the most experienced woodsmen sometimes get their directions twisted and are temporarily lost. However, they seldom remain long in this dilemma.

Before leaving on a trip, it is a good plan to mention where you are going, to some reliable person. Study a good map of the vicinity and memorize where the main creeks and rivers flow. While travelling observe everything, the type of exposed soil, areas with heavy moss, the creek bottoms, trees, rocks and the shape of mountains or hills. Each has character and although some may



Figure 2

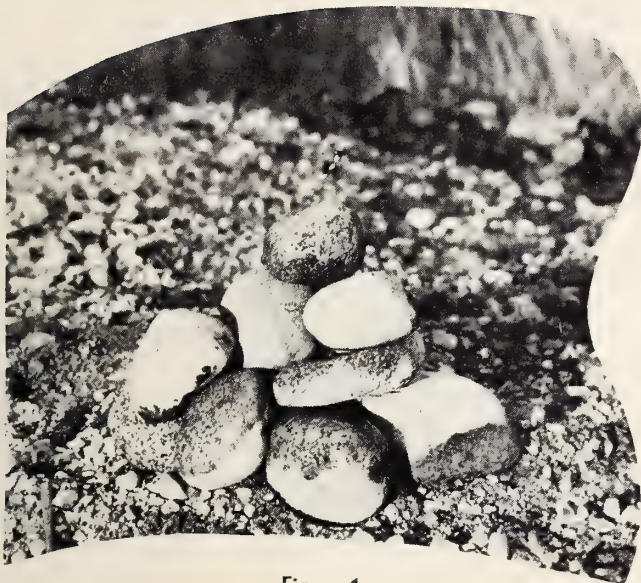


Figure 1

be similar, none are exactly alike. Practice will enable you to recognize these as easily as you do people. Soon it becomes a subconscious habit and a source of enjoyment. A small chip of a bird's eggshell or a peculiarly shaped scar on a berry bush may help you identify a trail for your return trip.

If you should become lost, the first thing to do is sit down calmly. When a person realizes that he is lost, he usually experiences a form of panic, not necessarily caused by fear but often by an overwhelming feeling of frustration. The forest seems to become a thousand times larger, the lost person feels small and insignificant and definitely out of place, almost like a trespasser in some hostile land. The first impulse is to hurry back to his

starting point, which is a dangerous and useless thing to do. Thoughtless travel got him into the predicament and more thoughtless travel will only make matters worse. Don't worry about being lost because that won't help clear, calm thinking. Worry and mental fatigue can use more body energy than hard travel.

When you feel perfectly calm, start to think about what you did on the trip. Remember as closely as possible how far you travelled in each direction. Decide on a plan of action and stick to it until you prove definitely that it is wrong. Be sure to leave a good trail for any searchers to follow. Knowing that you are aiding them will help you retain your calm, and you may want to retrace your steps.

Every time that you cross a creek, make a stone cairn as shown in Figure 1. Also, break a limb off a sapling, so that it can be trimmed to form an arrow pointing the direction you have taken. (Fig. 2). Experienced searchers will usually follow the creeks and try to pick your crossing. As you go through the bush, snap off the tips of saplings to that they point toward your course of travel, as shown in Figure 3. If you know that searchers will be looking for you, light a smoky fire to help them. Be very careful not to start a bush fire, which may place you in an even worse predicament. At any old camps that you may find and at your stopping places, leave notes giving your direction of travel.

If all plans of action fail, the best general plan to follow is to travel down the small creeks. These will lead to larger ones and eventually out to some main river. By doing this, although you may be following a meandering course, you are carrying out a consistent plan of action. There is more chance of some form of human habitation on a large stream or river, and travel along one is usually easier than crossing undulating country.

BRINGING UP YOUNGSTERS IN BIRDLAND

by JOHN H. FURBAY Ph.D.

BIRDS exhibit their most domestic traits during the incubation of the eggs and the rearing of the young. The attachment of the parent-birds to their nests and young increases constantly during this period. When the eggs were first laid, the birds would desert the nest at the least sign of danger, but after the eggs have hatched, even the most timid birds will stick with their nests in the presence of danger. Birdlovers soon learn not to approach too close to a nest until the young are hatched.

Some birds have so little home-instinct that they will desert their nests in the presence of danger even after the young are hatched. I have known this to happen among Mourning Doves, Hawks, Herons, and Pelicans. On the other hand, the Chickadees are such home-lovers that they can hardly be driven from their nests. They will sometimes permit a person to stroke them while they remain on their eggs. This has been reported to be true also of some Warblers and Vireos.

Many birds have developed very little parental instinct when the eggs are first hatched. This instinct increases rapidly however, while the young are being cared for, and reaches its highest point at the time the young are ready to leave the nest.

After the eggs have hatched, the babies are not fed immediately. The time lapsing before the first feeding

varies much with different birds. Likewise the method of feeding varies.

Many young are fed first by regurgitation. This means that the parent bird swallows the food; then, when it is partly digested, throws it out in to the open mouths of the young. Mourning Doves and Goldfinches continue to feed their young in this way till grown, while Herons and Bitterns feed in this way only as long as the young are in the nest. This is the reason no one ever sees these birds returning to their nests with anything in their bills. Most other birds discontinue this method of feeding in a short time. The Waxwings use their crops to carry fruit and insects to their young.

The commonest way of feeding the young, at least after they are a few days old, is for the old bird to carry food in its bill and to drop it into the open bills of the young, as far down in their throats as possible. This keeps live insects from escaping. Pelicans, which feed on fish, allow their young to crawl inside their large mouths and feed there.

Birds usually do not distribute equal amounts of food to each of the young, but feed the hungriest first and continue to feed it until some other nestling gets hungrier and stretches its neck higher than the others. Fortunately, Nature has provided a means of preventing the over-feeding of one, and when he has had enough,

his throat muscles refuse to work any more. If a morsel of food is not promptly swallowed by one baby, it is removed by the parent-bird and given to another of the young.

Most birds continue to feed their young after they have left the nest, and until they are able to fly about and catch their own food. The Swallows teach their young to catch insects on the wing. They fly past their young and drop the food, which the young must catch out of the air.

The amount of food consumed by young birds is astonishing. There is a famous experiment of feeding a young Robin all the earthworms it would eat. The worms were fed one after the other to the robin until it had devoured fourteen feet of earthworms — all the same day. Other similar experiments have been made. Young Crows will eat their own weight of food in one day. Young birds are not fed great amounts at one time, usually but are fed often. They digest

their food very rapidly, and thus can continue to consume food brought to them from sun-up till sun-down.

There is a great difference among birds as to the amount fed to the young at each trip, and the number of trips in a day. Hawks bring a fresh meal to the nest about once an hour; Humming Birds, every twenty minutes; and Chickadees as often as one trip every minute. House Wrens have been reported making more than seventy trips to the nest with food in one hour and Rose-breasted Grosbeaks have been found making about forty trips an hour during daylight.

Both the male and the female parents feed the young in most cases. They both make trips back and forth between feeding grounds and the nest. This is one time when the two work together in their home activities. This is a busy period for them, and they both apply themselves diligently to the task of rearing and feeding their family.

Nature's Own Seaplanes

by CARL L. HUBBS

THE whirling motor and the whirling propeller, both involving the principle of the wheel, are the essential points by which the airplanes of man differ from flying fishes, nature's own seaplanes. With this exception, vital it is true, modern airplanes are a marvelously close reproduction of flying fishes. To offset this defect in the natural product, the flying fishes are the masters of both water and air — submarines and seaplanes in one.

Pioneers in aeronautics and designers of early aircraft made the mistake of neglecting to study the most airplane-like of all animals, the flying fishes. The idea had become so firmly fixed in man's mind that birds are the pre-eminent animals of flight that they alone were looked to in the attempt to discover the principles of flight.

That there is absolutely no vibration of the outstretched pectoral fins while the fish is in the air is clearly observable, even without the aid of field glasses. When a fish happens to fly directly away from the observer, a condition which would make easily evident any up-and-down movement, the edges of the planes always stand out clear like knife's edges, without a trace of doubling or of a blur, even when the fish flies into a high wind.

I conclude from my observations, therefore, that a flying fish when in the air makes no effort by any flapping or vibration of the fins to add to the velocity it gained by the sculling of the tail during the swimming under water and during the taxi at the surface. That it does, however, use the fins in the air to control the direction of the flight is certain. This control is most often seen when a fish avoids the obstruction of the ship's bow by flying around it in a distinct curve, and even more spectacularly when one, headed directly for the ship's side, turns off at right angles in a curve of short radius. When a flying fish approaches even closer to the ship, it dives into the water, to take advantage of the greater resistance of that medium in making the shorter turn necessary to avoid a collision with the ship. The control is so neatly perfect that I have never seen one strike a vessel by day, though they do so when blinded by a light at night, and I have found one published record of a flying fish striking the side of a ship. Occasionally

I have seen them collide, not with a ship but with one another (as though to heighten the analogy of their flight to that of airplanes). Flying fishes, therefore, seem to be lacking either in perfect flight control or in perfect air vision.

A person's offhand estimate of the time a flying fish remains in the air is usually several times too great. During my observations on the species of biplane flying fishes in Asiatic waters I timed 424 flights or parts of flights. The two longest single flights, during which the fish remained completely out of the water, lasted only 12 and 13 seconds, respectively.

Resistance in the air is considerably less in the flying fish than in the plane. The fish requires no landing gear whatsoever and there is a complete absence of external braces and little to produce parasitic resistance. The vertical fins are necessary as stabilizers. The skin friction must be slight on account of the wet and mucous-covered surface.

* * *

"Forestry Directory of Quebec"

THE first volume of a new and much-needed directory, bearing the above title, and with English and French text, has been issued by Canada Indexing and Publishing Reg'd of 92 St. Pierre Street, Quebec. The editorship of Dr. A. R. Gobeil has produced an exhaustive compilation not only of all forest industries of the province (and thank goodness, with their street addresses in the larger centres) but with much additional information on the forest resources and the organizations that deal with them. The book of 350 pages fills a real requirement and should be welcomed in many thousands of offices. The price of the volume is five dollars.

* * *

Q. How should the soil be prepared for tree planting?

A. The soil should be worked to a depth of at least sixteen to twenty inches. Deep ploughing or spading makes a reservoir to hold moisture that feeds the trees through a dry season. This will also allow the roots to penetrate to a greater depth and thus ensure strong, healthy trees and shrubs.

BRITISH FORESTERS FACE AN ANIMAL PLAGUE

by J. D. U. WARD

ticularly for beech and sycamore. Wild deer are much more numerous than might be expected in so densely-populated a country as England, and their numbers have increased in the last 25 years.



What rabbits can do to a beech tree.

CERTAIN kinds of natural damage which would of relatively slight account in large forests have to be regarded seriously in artificially-planted and intensively-managed forests. The point is illustrated by a group of photographs from England. One shows honeysuckle (creeper) damage in a young ash plantation, and other photographs show damage by rabbits, squirrels and deer. Rabbits are the worst of all forest pests in England. The destructive squirrels are of two kinds, the native red squirrel (which is specially destructive in young pine plantations) and the grey squirrel, introduced from Canada and the U.S.A. within the last 75 years, whose mischief is for the hardwood forests — and par-

An anti-deer fence, six feet high, a costly addition to plantation growing in the British Isles.



A top broken by animal browsing.



Rabbit damage to a pine seedling.



Wabasta Lake, North Ontario.

HOW AN AMAZON DRUG RIDS OUR STREAMS of USELESS FISH

by ALAN LONGSTAFF

NATIVES of the Upper Amazon Valley, securing fish for their tribal feasts by using a solution made from the roots of certain trees, had no thought of blazing a trail for fisheries management planners in Canada. Their practice, in modified form is, nevertheless, used to improve trout fishing in some waters in the Province of Quebec.

Fisheries management, in Quebec and elsewhere, presents many problems. In Quebec, the principal effort is to provide better fishing for *Salvelinus fontinalis*, the Speckled Brook Trout. Among those problems are: the presence of too many coarse fish and, in some cases, too many small trout to provide good sport. There

are also instances of lakes which contain few fish but very large ones.

These and other factors are carefully studied by men whose interest is to provide better trout fishing. Water temperatures, the length of the growing season, space for growth, and food supply must all be considered in any effort to produce more game fish per acre of water.

There is also the matter of maintaining a proper balance between desirable and undesirable species. Lakes with a population of coarse fish as well as trout often have the natural balance upset by anglers, because the trout carry the weight of the fishermen's efforts, while the coarse fish — minnows, suckers,

chub, catfish and others — are neglected. This may prevail to the extent that the feeding grounds are dominated by coarse fish.

Such lakes can be brought back to the stage of being good fishing waters, but this job may require a period of years, with suitable stocking, and perhaps, cessation of fishing.

Recent advances in fisheries investigations have made two new materials available for the improvement of fishing waters. One of these is mineral fertilizer, containing nitrogen, phosphorus and potassium. The use of this in one 40-acre lake on Oriskany Club property, north of Montreal, doubled the weight of trout in that lake in 12 months.

The second is a material familiar to many under the commercial name of derris root. This was used by the natives of the Upper Amazon Valley to secure fish for their communities. It also occurs in the roots of trees in the Malay Peninsula, and is sold commercially as 'cube' root when from Malay, and 'derris' root when imported from Brazil.

In each case, the toxic ingredient is rotenone, under which name it is being used by Quebec fish culturists.

The Amazonian natives used this material when spawning fish began to school in their rivers. A quantity of the root, mashed to a pulp, was placed in the bottom of a canoe and covered with water. This provided a solution which was distributed as close as possible to the schooling fish. Then, as the fish rose to the surface, they were gathered to provide material for community feasts. The consumption of these fish is possible because fish poisoned with this agent are still quite edible.

Another feature of rotenone, as now used, is that it loses its toxicity in approximately 48 hours at a temperature of 70 degrees Fahrenheit. When used with judgment it has little or no effect on fish food.

Rotenone has been successfully used in Quebec waters on two occasions.

In a tributary where suckers and large chub were spawning, approximately 12 pounds of rotenone, introduced to the stream above the fish, destroyed 1,200 pounds of coarse fish — suckers, large chub, a few minnows — and 30 pounds of trout.

The operators at first thought that they had given the fish a tonic. As the rotenone reached them, they were first greatly activated, swimming in every direction at great speed. The men in charge were somewhat alarmed — but fifteen minutes later the fish



Get out and

PLAY

There are sports for every age and disposition, sports from which every age can benefit. Choose the one which suits you best. Get out and engage in it yourself. Enjoyable as it is to watch others, being a spectator cannot give you the development of body, mind and spirit which comes from personal participation in some form of healthful sporting activity.

MOLSON'S

were dying so rapidly they thought they had poisoned the whole watershed. This fear, however, proved to be unfounded.

The other test was of a small lake in the Lachute district which was literally overrun with millions of minnows; to the extent that there was no chance of young trout feeding.

Some 300 soundings were taken of this lake which covers about 26 acres, has a maximum depth of 53 feet and an average depth of 20 feet, twenty feet from the shore.

There is what fish culturists term a definite thermal stratification in practically all lakes during the summer months. Only the upper layers of the water are warmed to any appreciable degree; depending upon prevailing weather, and varying, in any lake, from month to month and from year to year. In smaller lakes, the difference between the upper layers of warm water, which extend only to a depth of 25 to 35 feet, and the lower layers of cold water, encountered at a forty-foot or slightly greater depth,

is frequently as little as three or four feet.

Trout are cold water fish and, with few exceptions, the coarse fish frequent warm water. During warm weather the trout usually go down to the cold water levels, whereas the coarse species will be in the upper, and warmer layers, and not necessarily more than a few feet apart.

Professor B. W. Taylor, Biologist and Director of Fish Culture for the Province of Quebec, who conducted the work on the Lachute lake, took advantage of the thermal stratification to destroy *all* of the coarse fish in the lake — and killed only *three* trout.

One of these trout had been confined in a minnow trap, at a depth of six feet, to see how it would get along. The operators calculated that the poison would not act at a greater depth than 15 feet. But, as the caged trout was lifted frequently for examination, it did not have the protection of the meagre six feet which had been intended.

Dr. Taylor summarizes results as follows:

"The beaches and shores were literally covered with dead minnows and suckers, and no live ones have since been seen. The killing effect went on for three days and, at the height of destruction, the lake surface was stippled with dying fish, which were seeking relief. The smaller fish died first and then the others, according to their size and their proximity to location and disposal of poison. Many of them made for the shore and, where the slope was gentle enough, some actually came ashore before expiring.

"Even leeches were affected, but not as quickly as the fish. Frogs saved themselves by jumping from the water.

"At the end of the third day, when all of the coarse fish were dead, and very conspicuous on the beaches and in shallow water, there was a noticeable odor of decomposition.

"The best practice is to put up with this nuisance, which is short-lived, in order that the lake is not deprived of this valuable fertilizer."

Are Wild Animals Ferocious?

By TONY LASCELLES

THE general belief that many wild animals are terribly ferocious has suffered a serious setback during recent years. Fantastic tales of awe-inspiring encounters by egotistic hunters anxious to enhance their bravery and prowess in the public mind, have not only fostered gross misconceptions of animal psychology, but have produced erroneous contributions to natural science.

Ideas garnered from blood-curdling stories from our own Dominion, Africa, India, and other parts of the world, still prevail, and in the minds of many, bears, wolves, lions, tigers, etc., lie in wait to destroy and devour the luckless human who chances by.

That several species of wild animals will attack Man under the influence of abnormal conditions is true. That men have been killed by bears, lions, tigers, etc., and even moose and small deer, is a matter of indisputable record. On the other hand the reason for human destruction is largely the fault of the hunter and intruder failing to sidestep a meeting or acting with insufficient experienced judgment in an emergency. Exceptions exist, of course, but generally, they are exceedingly rare. As a matter of fact it is common knowledge to the

field naturalist of this day and age that wild animals mind their own business if afforded the opportunity.

Many, nevertheless, are not slow to resent interference, which is quite natural and to be commended. They do not seek trouble and, furthermore, they take life only to fill the pressing need of natural food and self-protection. Man is the only animal that kills for pleasure and without any other reason than the satisfaction of appraising his ability to needlessly destroy. Surely if the hunter becomes the hunted and is struck down by the quarry he has wounded or molested, can he be logically assumed less ferocious than his intended victim. We admire the man who fights bravely in defence of his life, mate, or offspring, yet we do not classify him as dangerous and ferocious for so doing. Why then, in justice, proclaim a self-respecting member of the animal people dangerous and ferocious when occasion rightfully demands a measure of aggression.

The same may be said of the animal who attacks humans without warning and without apparent reason. All creatures of the wild learn by experience. Sometimes the result of man's presence has left favorable im-

pressions, as can be demonstrated within the confines of sanctuaries and national parks. Often, though, introductions to mankind have induced direful consequences, — loss or molestation of offspring, painful wounds, and death to mates and companions. Consequently as all animals are endowed in varying degree with a certain amount of intelligence they profit by experience and are not apt to await human aggression when unable to slink away and quite naturally ensure to protect themselves to the best of their ability.

Africa supports most of the so-called "ferocious" animals of the world, and so is a fertile field to appraise the "bad" and "inconsiderate" manners of its denizens whose habits may be rightfully considered as the worst examples for comparison with lesser folk elsewhere.

To those to whom Africa is merely a distant continent, dark and forbidding, the motion picture should dispel all doubt. Martin Johnson in his films "Simba" and "Congorilla" has shown that Africa's "murderous" beasts do not attack every human they see without provocation and even have no objection to being

(Continued on page 31)

"Ontario Manufacturers"

(Continued from page 12)

their revenue from the supplying of machinery and equipment used in the conversion of timber in the northern regions. The importance of the provincial forests to general industrial and commercial activity and to the well-being of all classes of population makes it impossible to draw a line between the stability of the forest resources and the stability of Ontario's over-all economy. The Ontario Division of the Canadian Manufacturers' Association must, therefore, be concerned with the great need for the development of consistent long-term, efficiently administered policies, designed not only to continue and increase the current production but to provide for increasing value in the future. It is, however, conscious of the magnitude of the problems incidental to the care and maintenance of these assets.

It may reasonably be said that Ontario stands in what may be described as a half-way position, where it can look back upon the past with its loss of valuable forest properties, but with the knowledge that it still has substantial reserves which may be perpetuated under skillful management. From the standpoint of the provident use of public-owned property, forest management has a compelling interest for all Ontario citizens. The larger part of the area now bearing timber growth is of the non-arable type. Unless it is guarded and developed to produce the maximum of wood harvests per acre, it cannot be considered as an efficient unit of the public estate. In face of the steadily ascending consumer demand for wood products, Ontario's advantage from her forest possessions promises high regard for skillful handling of the wood and properties. Unlike the early pioneer days, exploitation of timber-lands calls in these times for far-reaching controls of an engineering character that will supply current needs of industry without impairing the capital stock of the timberlands and their ability to furnish repeated crops of equal or improved quality. The active trend in all forest-owning countries is to maintain undiminished production of forest lands and to this end of technically trained foresters becomes more and more essential.

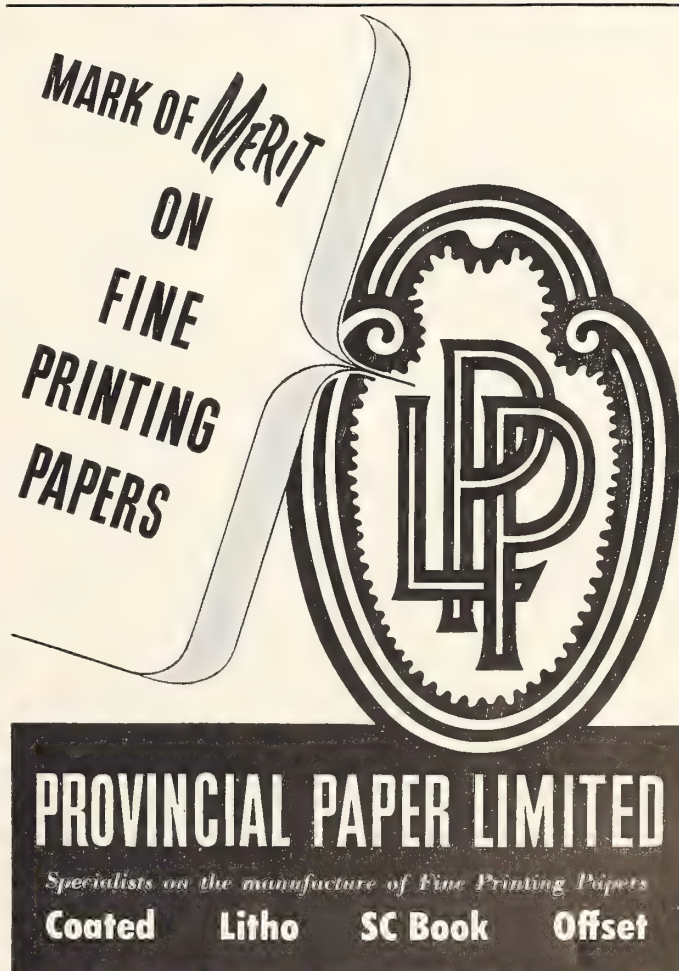
Ontario's forests are only now emerging from their status as an accidental natural heritage to a wholly new status as a reservoir of multiple industries and communities. This change has been prescribed by a world situation greatly to Ontario's advantage. The neighboring states of the United States sacrificed a considerable part of their forests within the memory of people now living, and while they have gone extensively into reforestation and may in due course build up new sources of supply within these areas, they will probably look to Ontario for some time to come. Canada relies on export markets for the sale of a large portion of its forestry production. The price situation at the present time appears to be favorable, but as world trade recovers, Canadian manufacturers will have to meet the competition of other countries where forest production has been carried on with less wasteful methods with consequent lower costs and prices which Canadian manufacturers will have to meet.

In northern Europe the lessons of scientific control of forests have been well learned and applied and Ontario should have at its present stage the advantage of these great advances in the application of science. There appears to be no reason why Canadian practices cannot be adapted to the best known scientific techniques which are being developed from the application of scientific management to forestry in northern Europe.



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DON'T LET THIS COMMISSION PASS INTO HISTORY

A 'Brief' submitted to the Ontario Royal Commission on Forestry, at Toronto, December 16th
by W. A. Delahey, Member of the Ontario Board of the Canadian Forestry Association.

THE Canadian Forestry Association respectfully submits the following brief on a subject contained in the terms of reference of the Ontario Royal Commission on Forestry: (i) "The education of the public as to the importance of forests and woodlots in the social and economic life of the Province."

First: Instruction at school age levels. In our belief, the machinery of the Department of Education should be utilized to make an understanding of Forestry a first requisite of every child's training. Generations have succeeded one another with little knowledge of the part played by Ontario's forests in the life of the province, and minor appreciation of the meaning of 'resource management' as the outstanding problem of the people and their government. On the contrary, the mentality of exploitation continues to govern the mind of the young graduate of public and high school regardless of its archaic bearing upon modern conditions, and in turn sets the pattern of public policy. An educational curriculum that fails to train children to contribute constructively to the basic needs of their native land falls short of its purpose. This poses a question which cannot be solved otherwise than by a cooperative arrangement between the Minister of Lands and Forests and the Minister of Education.

It may be pointed out that in countries such as Norway, Sweden, and Finland, where forest fires have been brought to a minimum and forest management elevated to a universal practice, the body of public

opinion has been shrewdly built up from the senior grades of elementary schools. The absence of forest wastage and the progress of forest culture may be directly attributed to the beliefs and convictions inculcated in nearly all Scandinavian children at early stages of their school experience.

TRAIN THE FARM LADS

Second: A plan of forestry education should contemplate the training in farm forestry of the classes of county agricultural representatives who now take the field with an all too sketchy knowledge of the farm woodlot question and small enthusiasm for giving it effect. The training of young farmer students in colleges of agriculture as to the principles of woodlot care, and the popularizing of extension courses in the same subject for the service of any woodlot owner would serve a most useful end. It is inadequately recognized that Ontario's woodlots constitute a very important section of the provincial timber resources, doubly valuable because of their ready accessibility, the simplicity of the labour problem, and the nearness to profitable markets for surplus wood products.

In this connection, any wooded province of Canada may well consider the experience of Sweden which has five 'Ranger' schools for training assistant forest managers, and of Norway which maintains six elementary training schools in forestry, as well as courses given in the many schools of agriculture. Rigid entrance requirements and skilled instruction have developed a highly-competent body of forest assistants.

TELL THE STORY TO THE PEOPLE

Third: The history of numerous Royal Commissions on Forestry suggests that even the most painstaking and sagacious official report may create only minor improvements in public policy and administration because it fails to establish itself in public conviction. The report becomes a government document, but seldom penetrates the understanding of the people, nor does it kindle popular enthusiasm. The burden of implementing such a report rests upon a government, occupied with scores of new and urgent public issues, and, as history shows, any particular issue that lacks popular and insistent support may be forced into the background.

With such facts in view, we feel that the final report of the Ontario Royal Commission on Forestry should be looked upon only as a commencement in the winning of public confidence and favour. The Ontario Branch of the Canadian Forestry Association, reorganized and strengthened on a plan now pending, might well undertake a mission of public enlightenment as to the findings and recommendations of the Commission. Every Board of Trade, Chamber of Commerce, Service Club, and newspaper editor, should be made cognizant of all references in the report that require public collaboration. This campaign should be sustained unremittingly until the Commission's plan of efficient forest management is understood by all elements of the people.

We cannot emphasize too firmly that any advance in a provincial forest policy must look to the people for

Birches in Rockcliffe Park, Ottawa.



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approval. There exists today a vigorous and widespread body of public opinion favouring 'resource management' by modern engineering principles. That receptive sentiment, however, will require cultivation on the specific objectives that may be set forth in the Commission's final document. It appears to the Canadian Forestry that the task of the Commission will not be completed until means are found to inform the people of Ontario of the essential facts and their implications as given in the Commission's analysis, and we urge that this work of dissemination should be promoted under non-govern-

ment auspices so that the impartial attitude of the Commission may retain its full quality in the course of public interpretation. The Canadian Forestry Association gladly offers its services in developing popular understanding of the Commission's recommendations and, in turn, suggests that the Government of Ontario might provide our Association with the necessary aid to place such services on a successful basis.

Yours very truly,

The Canadian Forestry Association

The Road to Abundant Forests

(From the United Nations Committee on Forestry)

THERE are three major avenues of approach to the dual problem of preventing the world's forests from becoming wasting assets and of insuring a continuous wood supply within the purchasing power of the average man. The first avenues lie in technological and industrial advances that may make it possible to utilize a great deal more of the tree substance. The process of converting round logs into square timbers is essentially a crude, uneconomic process of elimination, and the actual amount that emerges as the finished product is a very small fraction of the whole. In North America 27 per cent of the volume is left in the forest in the form of defective trees, tops, stumps, and limbs. Ten per cent more is bark. The saw converts 10 per cent additional into sawdust; slabs and edgings account for another 20 per cent. If the boards are destined to be resawn and made into furniture, at least a third of the wood they contain is wasted in manufacture, and as a consequence less than one fourth of the wood substance is actually used.

These wasteful processes are gradually being corrected. The modern approach regards wood as a raw material for chemical conversion — it breaks wood down into pulp and rebuilds it with a minimum of waste into ever-increasing numbers of end products. All over Europe new industries have been installed to process low-grade and small-sized wood. In Central Europe, where every stick of wood cut is removed from the forest, between 50 and 60 per cent of the volume is utilized, compared with 25 per cent in United States. Even the unused material is not thrown away but serves as a cheap chemical raw material: sawdust and waste-pulp liquors are converted into cattle feed, ethyl alcohol, rubber, and plastics. In 1943 Sweden derived some 30 million gallons of alcohol from the waste of its forest industries. These new processes are being introduced in the United States and Canada, where it is estimated that the waste in forests and forest industries could yield annually as much as 3,000 million gallons of alcohol, equivalent to about 10 per cent of the continent's prewar consumption of motor fuel.

A second method of increasing the amount of available wood lies in the literally thousands of tree species whose growth today is largely wasted because we do not know how to process or use them. Three quarters of the tropical forests in Africa and in Central and South America have no present economic value because satisfactory methods of processing and seasoning have never been worked out, and because their utility has never been ascertained. It has not been many years since western hemlock was omitted from forest estimates in the United States because it was regarded as a weed tree. Now it is used in great quantities as structural

timber, for pulp, and even for rayon. Black walnut, once piled and burned as an encumbrance of the soil, today ranks among the highly prized woods of the world. Similarly, as research widens the horizons of knowledge to include the utility of unknown species in South America and Africa, a huge reservoir of wood substance, now wasted or used only in limited quantities for fuel, will be made available.

But the third, and by far the most fundamental means of assuring abundant and continuous wood supplies, deals with the source of supply; it has to do with the protection and management of forests, and embraces all the techniques that go to make up the practice of forestry.

The goal of forestry is continuity of use, for only in terms of human use is forestry meaningful. It seeks to bring forests to a state of high productivity and make that productivity continuous; it seeks to convert wild forests, where growth merely balances decay, into managed forests, where the growth is systematically harvested.

Steps to increase the productivity of managed forests are many and varied, ranging from simple cutting methods that aim only to insure reproduction, to elaborate measures such as seed selection for the development of faster growing species, and drainage to increase the fertility of the soil. Justification of the more costly intensive measures depends on the degree of utilization and on the value of the end product. In Europe, for example, it is economically possible to thin the forests at frequent intervals, thus stimulating growth and increasing both value and yield.

Because of differences in management, forests vary widely in their yields per acre. Compared with an average per-acre yield of 30 cubic feet in the United States, the annual growth in Denmark's forests attains 90 cubic feet, despite the fact that soil and climate are less favorable to tree growth.

A managed forest, with its continuous flow of wood and its recurring needs for silvicultural treatment, offers employment to far more people than a forest that is being mined. In Denmark 750,000 acres of forest furnish employment for about 6,000 people, or one worker to 125 acres. In Switzerland the 1.7 million acres of public forest give work to nearly 10,000 full-time and about 30,000 part-time employees, an equivalent of one full-time worker for 100 acres. The forests of the United States, which in 1936 gave direct and indirect employment to about 3.75 million people, would, if put under management, give employment to over 6 million, and raise the annual growth of wood from 11 to 21 thousand million cubic feet a year.



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We're Losing Our Chief Partner— THE LAND

by J. D. RATCLIFF
Editor of "Science Yearbook
of 1946"

SOIL is the basis of any nation's wealth. Only one thing stands between us and hunger — a few inches of topsoil. When wind or rain strips the layer of topsoil from the land, it takes nature 200 to 1,000 years to replace it.

Cape Cod is a sandy waste today. Less than 100 years ago it was covered with prosperous farms and rich forests. Trees were cut to provide fuel for salt evaporators and sheep cropped the grass too low. With these protections removed, wind stripped the topsoil away, leaving only sterile dunes.

A recent survey shows that we have 460,000,000 acres of top-grade farm land left in the U.S.A. If this sounds impressive, remember that it takes about two and one-half acres to feed and clothe a man.

The survey brought out another significant fact: Forces of erosion are at work on 380,000,000 acres of this land. In other words, we have but 80,000,000 acres that are completely safe. That is not enough to feed the country as it is today — much less an America of 50 years from now with a greatly increased population.

Many thoughtful people expected war to take a fearful toll of the nation's soil. Around World War I we plowed 30,000,000 acres of the Great Plains to grow wheat. When we had seven years of dry weather in the '30's, the land started to blow. From the Canadian border to Texas there was one vast Dust Bowl.

In World War II not more than 1,000,000 acres of grassland were plowed. One Colorado farmer stated the case for a thousand others: "We wouldn't plow this land even if wheat hit five dollars a bushel."

In 1933 the U.S. Soil Erosion Service started preaching soil conservation — chiefly contour plowing. It taught farmers to follow the contours of a slope, so that each furrow would act as a small dam to hold rain water. Rain wouldn't rush off a hillside, cutting great gullies.

Impressive evidences of the value of contour plowing are visible everywhere. The writer saw one dramatic example from a plane window over Tennessee. One side of a hill was con-



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tour plowed. It was lush, green. The other was wrinkled with deep gullies. Rain had scraped topsoil away, exposing sterile clay hardpan.

The substance of the Soil Conservation Service's message was this: Plant trees on the steep slopes, grass on rolling slopes, crops on gentle slopes and flat bottom land. Farmers listened and took action. In 1937 they organized the first Soil Conservation District in North Carolina. Today there are nearly 1,400 of them, covering almost half the farms in the country.

This national conservation program is helping cut the annual toll of \$3,844,000,000 that we pay to erosion.

Belatedly, the world is realizing that by mistreating the land, modern man is flirting with extinction. He has already turned vast areas into desert. The western Mediterranean basin for example, was once the bread basket for the Western World. Today it is an arid waste. There is evidence that the Sahara was once a verdant plain.

Man can't afford to make any more such mistakes. As things stand now, there is barely enough land to feed and clothe adequately the earth's 2,000,000,000 inhabitants. Any further depletion of soil resources will mean increasingly frequent famines.

Most of the land wreckage caused by man is needless, foolish. Wise farm practice can actually improve land. Frugal Dutch farmers in Pennsylvania and Scandinavian farmers in Wisconsin demonstrated this. In both areas land is in better condition today than it was when original settlers arrived.

Hugh H. Bennett, Chief of the Soil Conservation Service, sums up the

situation: "We have enough soil left to take care of us — if we take care of the soil."

PLANTING TREES NEAR PRAIRIE DUGOUTS

AN answer to the question how close to a dugout should trees be planted depends on the specific functions and benefits sought when considering such tree planting. Three functions suggest themselves and these are, says John Walker, Superintendent, Forest Nursery Station, Indian Head, Sask.,

1) A means of controlling snow accumulation so that the amount of water collected in the dugout from the melting snow in spring will be as great as possible; 2) An effective barrier against hot, summer winds thereby aiding in reducing the amount of evaporation of water from the dugout; 3) An improvement in the appearance of the dugout, and the development of a woodlot area in the vicinity of it.

To fulfill effectively functions 1 and 2, plans should be made to plant trees on three sides of the dugout, preferably on the north, south and west sides. The east side may be left open and free from trees. The approach to the dugout for livestock may be arranged on that side.

If the orientation of the dugout is East and West the plan described may be readily adopted. If the orientation of the dugout is North and South, however, the approach to the dugout should be provided on the North side in preference to the South side, *unless water is taken from the*

(Continued on page 33)

ONTARIO-MINNESOTA COMPANY BURSARIES

THE President of the University of Toronto, Dr. Sidney Smith, recently announced the awarding of the Ontario-Minnesota Pulp and Paper Company Limited Bursaries for the 1946-47 session to Walter Pidlubny and Carl J. Pochailo, first year students in the Faculty of Forestry.

The value of the bursaries is \$500.00 for each year of the four-year Forestry course, provided the student maintains satisfactory standing in the University. The bursaries were established in 1944 by the Ontario-Minnesota Pulp and Paper Company Limited and are open to students from Kenora and Fort Frances high schools.

Walter Pidlubny, 20, is the son of Mr. and Mrs. George Pidlubny of Fort Frances, Ontario. After serving in the Army he obtained his Ontario Grade XIII standing at Fort Frances High School where he had attended previous to his enlistment.

Carl J. Pochailo, 18, is the son of Mr. and Mrs. M. Pochailo of Kenora, Ontario. He was a student at Kenora High School before coming to the University and took his Grade XIII examinations in Kenora.

Are Wild Animals Ferocious?

(Continued from page 24)

photographed at distances of only a few feet. He proved pictorially that they wish to mind their own business and have no desire to attack the human intruder of their domain without cause.

Among other explorers and naturalists who have invaded Africa to study without seeking to destroy their subjects for pleasure the name of James L. Clarke is predominant. Mr. Clarke says, speaking of wild animals: "Wild animals are much less dangerous than automobiles. One is in far greater danger attempting to cross Fifth Avenue, New York, than he is in going unarmed through the fifty thousand or more head of wild animals that inhabit the one hundred and ten square miles of the crater of Ngorongoro in Africa. The dangers arising from wild animals impress me so little that if there were any purpose to be served in so doing I would not hesitate for a moment to make the crossing of Africa from Mombasa to the mouth of the Congo River or from Cape Town to Cairo without a gun."

He continues: "All this commonplace truth to experienced naturalists,

yet many inexperienced people cannot believe it. If I should tell a series of blood-curdling stories of experiences with wild animals, I would have no difficulty in getting many people to believe me. But when, on the other hand, I make statements like these I've been making, it is hard to convince some others that I am veracious."

The late Carl Akeley spoke in like manner. Frank Hurst approached a mob of some twelve lions on foot and "boo-ed" at them. They ran away.

Of course Africa is not Canada, nevertheless we can scarcely expect the behaviorism of its denizens to supersede in violence the more humble species who share a continent with us, hunter's stories and newspaper narratives to the contrary. Even the most timid citizen can invade the Canadian wilderness without interference from the animal people. He will indeed be fortunate to catch a passing glimpse of fleeing game, unless

his knowledge of woodcraft is sufficient to outwit their wariness. Usually one fleeting whiff of man-scent is sufficient warning to all and sundry to make themselves scarce.

ANIMAL TALLOW FIRST USED

The earliest known soaps were made not from vegetable oils, but from animal fats; but they were scarcely worthy of the name of soap. The ninth century, after the Dark Ages, marks the emergence of soap as a plant product, with olive oil used instead of the primitive goat tallow. Even though all soaps, up until the end of the 18th century, were still quite crude, all the fine soaps for the past eleven hundred years have been made at least in part from vegetable oils, and olive oil was the first of these. For centuries, olive oil had been the most prized of all unguents for skin and hair; chief ingredient of the perfumed ointments of the patrician ladies of Rome, chosen for the ceremonial chrism of ancient priests and kings.



Chief Naturalist B. W. Cartwright near "Ducks Unlimited" cabins at Big Grass Marsh.

HUNTERS' PARADISES

"Ducks Unlimited" has established magnificent duck factories at Many Island Lake, Alberta; Kinistino, Saskatchewan; and Bull Pound Creek, near Hanna, Alberta. These instances testify to the outstanding work of this non-profit organization in developing Canada's wild-duck population.

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A PAL FOR FIRE FIGHTERS



A fire line 48 to 54 inches wide plowed with great rapidity.

RANGER'S PAL" is an apt description for a new firefighting plow developed for use in the forests of the Southeast United States. A ranger with a "Pal" and two or three men in a crew can get to a fire rapidly in a one-and-a-half ton truck and can do as much work in clearing a fire line as can a ranger and 20 or 30 men working with mattocks, shovels and rakes. With the plow loaded and ready to go, the small crew can often get to the fire sooner than it would be possible to get the larger crew together at headquarters. In fighting fires it has long been recognized that plowing a wide furrow is an effective way of checking many types of forest fires. The Forest Service has made good use of heavy equipment of this type drawn by 35 or 50-horsepower tractors. These larger plows are still in use, but the lighter plow and smaller tractor of 18-horsepower is proving valuable as a supplement. In the two seasons in which the "Pal" has been developed and improved, it has often happened that the "Pal" has gone in and done the control job before the heavier equipment could get to the fire fighting front. Drawn by the light caterpillar tractor, the plow includes a stout beam with heavy rolling coulter and a plow of the middle buster or two-way type that plows a clear furrow 28-inches wide into the mineral soil. A set of disks and wings spreads the loosened mineral soil to cover the forest litter on each side of the furrow. The result is a fire line from 48 to 54 inches wide. The unit will work in flatwoods forest litter or in heavy sod, but not in stony ground or in swampy areas.



The plow travels fast on a tractor.

WORLD BALANCE CALLS FOR NEW FORESTS

OF the once heavily forested Continent of Europe, only three countries now have appreciable quantities of timber beyond their national needs. Before the war, deficiencies in world wood production were made up by northeastern Europe and North America, but these regions had already begun to feel the strain upon their forest resources. The volume of standing saw-timber in the United States has been reduced 40 per cent in thirty years, and the timber annually destroyed by fire throughout North America would build a five-room house every hundred feet on both sides of a road from Paris to Moscow. With the destruction of forests by war and the enormous need for wood immediately after the war, a problem of supply arises whose magnitude and gravity demand an answer. (United Nations Committee on Forestry).

— ★ —

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by A. KOROLEFF

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As an educational service, the Canadian Forestry Association is distributing copies at 75 cents each, with a reduced price of 65 cents in orders of 100 or more. (Add 15 cents exchange to all cheques.) Address 1018 Canada Cement Building, Montreal.

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2—This effort costs money — dues from associations and clubs will not cover all expenses. While the 44 directors and five officers serve as volunteers, the Federation must meet the expense of an organization office.

Individual and company subscriptions (which are not subject to Income Tax) are necessary to help the cause.

MAY WE COUNT ON YOU?

The officers: President, Bernard Castonguay, Quebec; Vice-Presidents, B. L. Cassidy, Montreal; Omer Bernier, Ile Maligne; Forrest Keene, Sherbrooke; Treasurer, P. H. Bruneau, Montreal.

Complete information may be secured from :

The Secretary-Manager,
Quebec Federation of Fish and Game Associations
Room 1022, 132 St. James St. W.
Montreal, Que. Tel. MA. 3856

This space contributed by The Canadian Forestry Association.

dugout in winter. Under such circumstances an approach on the South side would be the more "comfortable". For practical purposes there should be little or no tree planting on the "approach" side of a dugout.

It goes without saying that soil mounds alongside dugouts should be levelled as much as possible before any tree planting is attempted near such dugouts. Trees should be planted from 50 to 100 feet from the edge of a dugout. At these distances the trees will use very little stored water.

The number of trees which should

be planted near a dugout to produce all possible snow accumulation, to delay the melting of snow in spring, and to reduce the drying effect of the summer wind, should be at least the equivalent of a three-row shelterbelt. Although some of these trees might be planted within 25 feet of the water's edge further to reduce surface evaporation, wave action, and water erosion, it is believed best to have the banks immediately adjacent to the water covered with grass. Such grass should not be allowed to produce seed and become a menace to the trees.

If soil mounds of any height are to be planted, trees selected might be acute willow for the lower levels, ash for the middle area, and caragana for the higher levels. Where the ground is relatively level the kinds of trees and planting arrangement recommended for farm shelterbelt planting are likely to be best. For ALL planting near dugouts fences should be provided, and cultivated margins from 8 to 16 feet wide OUTSIDE THE TREE ROWS should be maintained.

Are Your Trees Healthy?

THIS is a question many tree planters might wish answered as far as their own trees are concerned.

In the spring of 1946 and since, questions asked most frequently have had to do with evergreens. Needles of Colorado spruce were discolored; needles of White spruce were being eaten or had turned brown and were falling off; young growth on White spruce had dried up, and become brownish-red in color. These were some of the statements made, says John Walker, Superintendent, Forest Nursery Station, Indian Head, Sask.

Fortunately, or otherwise, there was evidence of most conditions reported by planters on young trees at the Forest Nursery Station. The discoloration of Colorado spruce needles had been studied early in April and the conclusion arrived at that while needles were injured there was no evidence of injury to the buds on the same stems.

It is believed that various unhealthy and unnatural

conditions manifested by evergreen trees, particularly spruce, this year developed as a result of one or other of the following factors or a combination of them:

1. Active growth continuing relatively late last fall;
2. Extremely cold temperatures experienced suddenly last fall;
3. Relative mild weather early in spring;
4. Abnormally and recurring low temperatures early in May after growth had started.

It is difficult for any planter to describe in a letter, in such a manner that the cause or cure can be accurately stated, an unhealthy or abnormal condition which may have developed among his trees. Instead planters should collect and submit to the office of the Forest Nursery Station, Indian Head, sufficient material of the affected tree, or of the insect or disease causing the trouble, to make identification possible. When this is done very little need be said by way of description or explanation.

Field Men Study Fish and Wildlife Management

IN ORDER to properly manage, protect and improve the natural resources of this Province for which the Ontario Department of Lands and Forests is responsible and to replace what has been lost in the past, the Department requires that every employee be conversant with the aims, objectives, policies, plans, methods and works of the Department as a whole and of the Division in which he is employed in particular.

Pursuant to this broad policy and especially in view of the recent accession of Fish and Game management within the Department, the first of a series of special instructional courses for Fish and Wildlife field personnel was held at the Ontario Forest Rangers School, Dorset, commencing December 2nd last. Thirty-seven Specialists and Overseers from both Northern and Southern Ontario Districts attended, along with six Regional Public Relations officials.

The course of instruction was planned and executed under the direction and supervision of Dr. W. J. K. Harkness, Fish and Wildlife Division Chief. The Royal Ontario Museum of Zoology, the University of Toronto, the Ontario Provincial Police and other Divisions co-operated by loaning instructional staff.

The complete course required a period of fifteen working days, eleven of which covered fish and wildlife conservation and management of the fish, game birds and mammals of Ontario, licensing, enforcement of regulations, general administration and public relations. The last four days were concerned with the background and organization of the Department as a whole; the flow of administration relating to the Department generally and co-ordinating Divisions, and offices in particular, such as Accounts, Personnel, Information and Education, Supplies and Equipment and Staff Training.

The need for good public relations was particularly stressed because the Department realizes that, without the whole-hearted support and co-operation of the people of Ontario themselves, many of the regulations now in force and the conservation measures now in effect and planned could be heavily discounted by evasion and apathy.

Both game and commercial fish, migratory and non-migratory game birds, and fur-bearing and game animals were studied and identified. The skull structures of certain animals were compared, such as dog and wolf,

and porcupine and beaver, identification of which are often a matter of importance. Identification of fish included forms averaging in size from minnows to sturgeon. Scourge of the Great Lakes, the Lamprey, came in for much discussion.

The study of conservation included ecology, i.e., the study of habitat and the effect of environment and association on fish and wildlife; methods of taking fish and wildlife inventories for the purpose of organizing and planning the restocking and control of fish and wildlife populations; the comparison of natural regeneration with restocking methods; hatchery procedure and protective measures through public education and co-operation, by enforcement of regulations and by licensing.

Tests were written at the close of the fish and wildlife curriculum, excellent gradings being attained by all "students".

Lecturers on fish and wildlife management and related subjects were Dr. W. J. K. Harkness, W. H. R. Werner, Dr. C. H. D. Clarke, H. H. MacKay and D. N. Omand, of the Department; and by Randolph Peterson, W. B. Scott, C. D. Fowle and C. E. Hope of the Royal Ontario Museum of Zoology, and Dr. F. E. J. Fry of the University of Toronto. Inspector Arthur Moss, Ontario Provincial Police, and Jas. Farrington, Percy Reville and Jas. Madigan of the Department lectured on enforcement procedure and licensing.

Public Relations were discussed and emphasized by Mr. A. R. Fenwick, Supervisor of the Department's office of Information and Education. The history and status of the Department and its organization, administrative, and office and accounting methods and procedure were presented by J. B. Thompson, supervisor of Personnel and Office Management, R. V. Metcalfe, Personnel Management, J. G. McMillen, Chief, Division of Accounts, and his assistant, P. B. McLaughlin; M. Clucas, Office Management, and O. C. Jennette, Chief Inspector. K. B. Smith, Staff Training, demonstrated On-the-job Training Methods.

Fish and Wildlife Specialists attending the course were: W. Keller, E. R. Meadows, J. S. Ellis, A. M. Hodgson, R. G. Sheppard, R. Baker, E. L. Skuce, N. McNaughton, G. M. Parks, C. F. Bibby, C. F. Cook, C. V. Crichton, C. R. Weaver, A. Dent, O. D. Lewis, J. Noble, H. E. Pearson, H. Harris and C. L. Perrie.

Overseers were: S. Dorland, A. R. Muma, H. S. Dorland, G. Buie, J. W. Scott, P. A. Thompson, S. C. Hudson, M. J. Inwood, A. E. Pennell, W. J. St. Pierre, S. Nodwell, C. Knapp, W. P. Stewart, H. S. Renardson, E. H. Deedo, W. A. Fraser, C. J. Ducharme, and M. S. Collings.

Regional Public Relations officials were: R. V. Whelan, Charles Dill, David Ness, J. E. Thompson, A. H. Macdonald, and Capt. B. H. Geary, V.C.

A class in Fish Identification.



Is Your Copy on Poorer Paper?

Due to the critical problem of paper supply affecting all magazines, a portion of this issue of 'Forest & Outdoors' appears on a sub-standard grade of paper stock. The publishers hope to remedy this situation within the next month. Meanwhile, we ask the tolerance of our family of readers.

THE WAY OF THE RIVER

The seldom told tale of the mother Otter and her final descent to the abandoned trap hidden in the depths of the stream

By HAROLD BUCHANAN

IT was what in the Old Country they call dimity dusk when the otter mother left her hole under the roots of the leaning ash that overlooked the river. A faint greying of mist was rising off the water and lay like soft owl's feathers above the alders on the flats. Robins called to one another in clear accents across the dreaming spaces of the valley.

It was the time of year when the skunk cabbage pokes up bright heads all over the swamps. In the forests there was the first delicate green of cottonwood, willow and alder showing against the sky. And all the wilderness byways were sweet with the scents of young growth and the first early blossoms of dogwood and sallow and bunchberry.

For a time the otter remained still, her head framed in the hole. Eyes, ears and nose searched the duskened stretch of river and valley for sign or scent of enemies. Finally, satisfied, she emerged and slid, with never a ripple or a splash, into the water. A silvery ream, pushing out across the stream, showed where her nose broke the surface as she swam.

The she otter swam fast for she had left a family of three blind cubs in the holt beneath the leaning ash and she must return soon. Who knew what prowling murderer might find her home during her absence, well-hidden as it was? The mother instinct was warm and quick within her, for this was her first litter.

A song sparrow sang his last song as she turned upstream. The gloom was deepening. An owl, like a dark shadow, winnowed on silent wings above the river.

Beyond the alder thickets that grew down to the very edge of the water, the river sang and murmured over a gravel bar. Beyond this again, lay a deep wide pool, gravel-floored and still as a windless morn. Here the great sea salmon came to spawn and hither the otter directed her course.

As she crossed the shillets of the bar she seemed scarcely to swim but to walk on the water. Then silently she dived into the depths of the pool. A string of bubbles, sliding over her shoulders and rising to the surface, traced her course underwater.

The eager water, brown and cool from mountain meadows, happy with the ecstasy of spring, flowed past the she otter's flanks. It was dark as deepest night in the depths of the pool, with only a glimmer of faint light to mark the surface. Under the far bank she rose to vent, then went under again. Wise with the wisdom of her race, she knew instinctively the places where the big game fish would choose to spawn. Deep down, she quartered the pool.

Then a dull flash of silver swept over her head and, swift as thought, the otter turned on herself and struck at the exposed belly. But the big steelhead was not to be taken so easily. With a lashing of the broad tail, the fish darted away, the otter in close pursuit. She followed the big salmon to the bar at the foot of the pool where it doubled back and tried to hide under an overhang of the bank. But the relentless hunter drove the fish out of

there and chased it into the depths of the pool. There she lost it momentarily only to find it again, hiding in the lee of a boulder. This time she did not miss. Having made her kill, the she otter dragged the fish out on the water's edge.

Immediately she fell to on the big steelhead. With her head on one side she crunched and bolted the fish, working from head to tail. When she had finished she was still hungry. So she slid into the river again and caught another steelhead, a small male that had come up from the sea to his first spawning.

As she dragged the fish out on the gravel the she otter suddenly lifted her head. From beyond the pool came a whistle, dry and questioning, the call of the dog otter. Then a faint glimmer on the water moved across the pool, the ream pushed away from the nose of the swimming dog.

When the dog climbed out of the water the she otter yakked at him and snarled. But he was well-fed and good-humored and started rolling on his back and playing with a shiny stone that he found. Not until she had finished eating the fish did the dog approach her. They touched noses and licked each other's face. Then the dog evinced a desire to play but she snarled at him and, suddenly remembering the three cubs beneath the leaning ash, turned and ran from him.

The dog made no move to follow, but turned upstream to where there was a high bank and an otter slide. Here he played by himself until the moon rose.

At the alder flats the she otter climbed out of the water and ran across the point formed by the long, slow loop of the river. She came out again at a point where the bank was high and steep. Here the dog otter had had a slide at one time but it had been long unused.

Now the she otter, yielding to temptation, spread her four pads and went down the smooth incline into the water. She did not rise again.

Down there on the streambed something gripped one forefoot with an agonizing pain. She tried to kick to the surface but the thing held her inexorably. She struggled and twisted, but she was helpless, strangling slowly. The heavy otter trap held her powerless. She went on fighting even as she drowned.

A young trapper had set the trap a good six months before. Wholly inexperienced, the old otter slide had looked to him like a good place for a trap. He had set others, too, along the river and throughout the valley. But his cabin was across the hills in the next valley and he had neglected his traps. Some he forgot altogether. Then finally he had ceased to come over the hills and his traps had lain untouched. In the spring, before he left for the settlement, he had not considered it worthwhile to come across to gather them in.

An hour later the moon rose and bathed the valley in silvery light. The ripples on the river glistened in its rays and the waters sang a soft lullaby. A water ousel raised a snatch of sweet, wild music.

In the wilderness life went on. It is the way of the river, of the outlands; the ancient law — that life should take life and man have dominion over all. Only man violates the law.

Over the drowned otter the deep shadows lay, dark and gentle. The water slid over her with a kind, concealing touch.

† *Nature Unspoiled*

**YOURS TO ENJOY
YOURS TO PROTECT**



"SNOWY OWL" by T. M. Shortt, Ornithologist.

The above illustration shows the snowy owl in his southern surroundings.



THE FARMER

—a Conservationist

The farmer, in knowing the difference between harmful and useful birds of prey and in protecting the latter, helps both himself and the cause of conservation.

Down from the icy wastes of the Arctic, the Snowy Owl glides into a farmyard and drops silently to a perch. Driven from his northern home by the periodic scarcity of lemmings, his favourite rodent food, the valuable bird seeks rats, mice and other despoilers of food and grain. Thus the snowy owl earns protection from us by helping to conserve our food supplies.

* "The people of Canada can perform a useful service to birds by providing food and shelter for them during times of stress, when their food becomes temporarily inaccessible."

* An excerpt from—CONSERVATION AND WINTER HELP FOR OUR BIRDS, by J. L. Baillie, Jr., one in a series of pamphlets published by The Carling Conservation Club.

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